GAS

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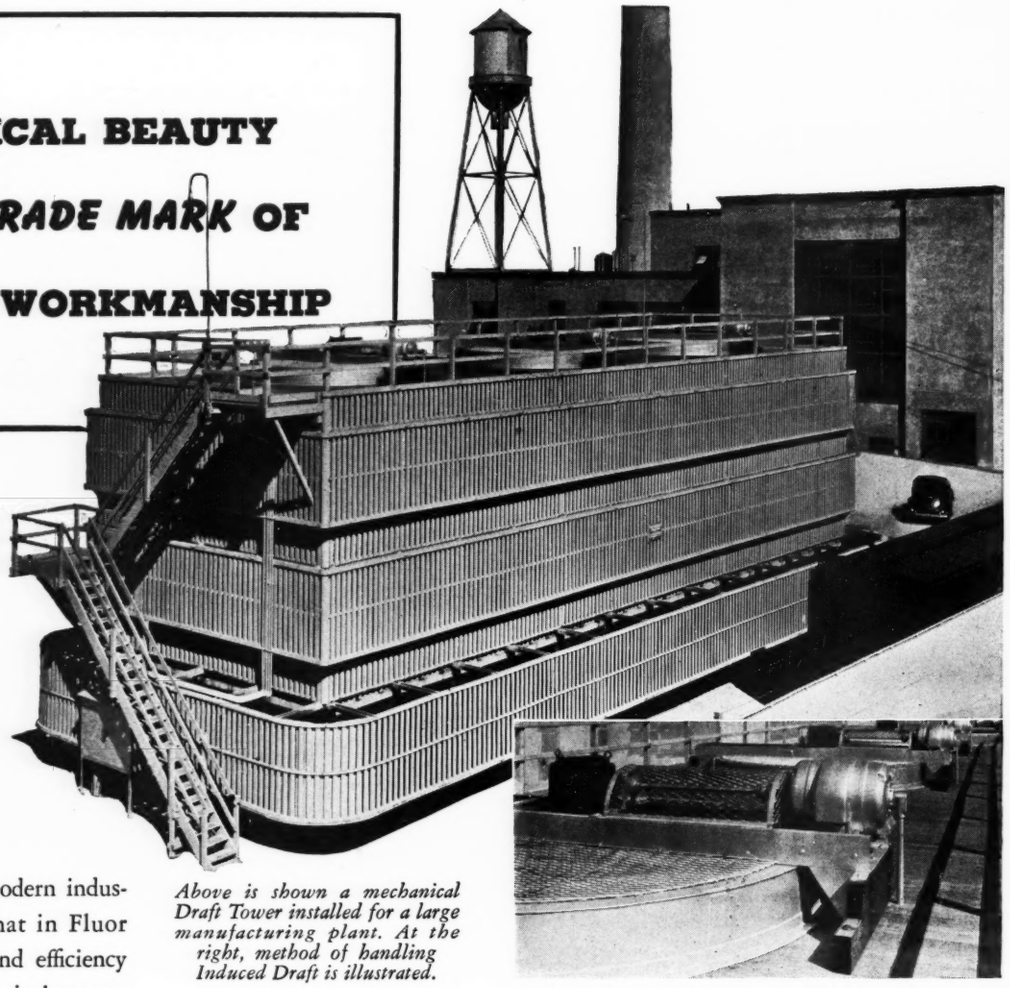

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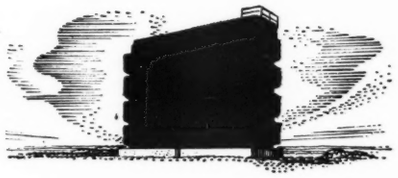

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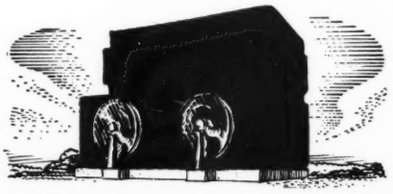

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Eighteenth Year of Publication

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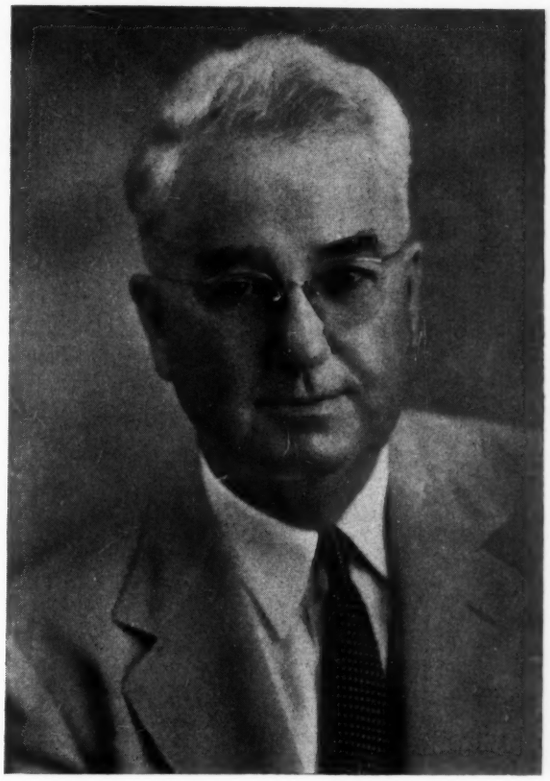
GUEST EDITORIAL



TOMORROW?

By HANCE H. CLELAND

President, San Diego Gas & Electric Company, San Diego, California

WHAT will tomorrow bring?—is a question in the mind of every thinking man or woman.

I lay no claims to prophecy—but certain present and prospective conditions seem to present situations calling for treatment which should be encouraging to those concerns operating along the Pacific slope.

In general these could be catalogued as aviation, ship building, enlarged Navy, new homes, revival of small manufacturing plants and the replenishment of inventories to meet civilian requirements.

Aviation is still in its infancy; its future calls for the greater use of aircraft for commercial, military and recreational purposes. The planes of tomorrow will probably be manufactured in great numbers from plastics or other similar materials and can be turned out in great quantities and at very low cost. The investment in airplane manufacturing plants is being "written off" rapidly. By the end of the war, fixed charges on such plants should be negligible. Demands for aircraft should keep these plants operating to substantial capacity for many years.

It has now been demonstrated that the airplane is an efficient fighting craft and its use by the Army, Navy and Marine Corps will be increased rather than decreased after the war. It is the opinion of many that aircraft will become a more important means of transportation of both passengers and property. The tens of thousands of young men who are being trained as flyers will demand and use low cost, efficient and safe "flivver planes" in lieu of the "jallopies" and "bugs" of the present generation.

Millions of tons of ships are being sunk and will continue to be sunk during this war. Water transport is as essential as it has ever been. When the demands of the Government subside, ship-building on a large scale will be resumed by all yards.

The present plans of the Government call for a two-ocean Navy which means to us on the Pacific Coast that the present number of ships, personnel and payrolls will probably be doubled.

The restrictions on the building of homes because of lack of materials and skilled labor, taken with the increase in population which is coming to and will remain on the Pacific Coast, will present a demand for tens of thousands of new homes.

Many small manufacturing plants, likewise because of lack of raw materials, are being and will be forced to suspend operations for the duration of the war. When the war is ended, these plants will resume operations and re-hire their employees.

The stocks of commodities for civilian use are being and will be depleted to a point where their replenishment will become a national necessity.

When all of these and probably other items, are totaled, they should produce an approach to normalcy and a continuation of prosperity on the Pacific Coast.

Photos by Robert Yarnall Richie

... to the test

Meter proving and testing of the finished product—or service check-ups—reflect the repeated inspections and tests at every stage of **AMERICAN** Tinned Steelcase Meter manufacture. Not forgetting the thorough analysis of all raw materials utilized in production!

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These qualities . . . even more greatly emphasized in the newly developed types of **AMERICAN** improved tinned steelcase meters . . . are given detailed description in CATALOG TG-4. Obtainable promptly if your copy has been mislaid.

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INCORPORATED (ESTABLISHED 1836)

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TINNED STEELCASE METERS

THERMALLY THINKING

Range Prices Pegged

ON January 2, Price Administrator Leon Henderson set the maximum manufacturers' price for household cooking and heating stoves at 2% above mid-October levels. Top prices charged for stoves may not exceed 112% of the lowest price quoted or charged by manufacturers between January 15 and June 1, 1941. The price schedule became effective January 5.

■ ■

P-46 Amendment

ALL utilities, both public and private, must now have OPM's express approval before making any expansion of property or equipment costing more than $1500 in the case of underground connections or $500 in other cases, unless the work was 40% complete by December 5.

This is according to an amendment issued last month to Preference Rating Order P-46. The amendment, which also limits quarterly use of maintenance, repair and operating supplies to the average 1940 dollar value, applies to all producers supplying gas, water, electric power, public sanitation services, central steam heating, and the Rural Electrification Administration.

P-46, issued September 17, 1941, permitted specified utilities and their suppliers an A-10 rating to obtain maintenance and repair materials and operating supplies.

■ ■

"ONCE the main valve is turned off, for any reason, do not turn it on again yourself. Call for a trained man."; from "Public Statement for Household Gas Users on Procedure During Air Raid Alarms," Office of Civilian Defense, Washington, D. C.

"Go to the meter and turn on inlet gas cock which you closed during the bombing."; from an advertisement, "What to do if Bombs Fall Nearby," published by Metropolitan gas companies in the New York area.

The O.C.D. release was quoted as an American Gas Association recommedation and was qualified with the statement that the local gas company would work out further directions with its local defense council. The advertisements of the gas companies, on the other hand, did caution the householder, if not familiar with the proper method of lighting and operating of his appliances to "call the services of a licensed plumber or other qualified help to turn on the gas."

Divided counsel of this kind does not adequately serve the cause of civilian defense, nor is it representative of the sort of advice that the gas industry should release to its customers. We do not believe that the average householder is competent to judge whether he can safely turn on the main gas valve once it has been turned off. And to advise them to hire a plumber to come in and do it for him is merely to invite future trouble when and if the air raid bombs begin to fall.

Defense measures will necessarily vary with different localities. It would be absurd to blackout Lebanon, Missouri, merely because Japanese bombers had been reported off San Francisco's Golden Gate. But every local air raid alarm must be regarded as an indication that the enemy is within striking distance; and no locality can rest its safety on the belief that it can never be raided from the skies.

Thus the raids, once they occur, automatically require the full application of all civilian defense procedures. Those involved in the domestic use of gas could and should be simple, and categorically specific. We believe that the home owner's greatest safety will lie in leaving his gas supply valve alone except under carefully explained conditions of bombing in his immediate neighborhood. And once turned off in an emergency, he should be instructed not to turn it on again until he has secured the services of either a qualified plumber, or of the service department of his local gas company.

■ ■

Cookery Curtailed

AN order restricting the production of domestic cooking utensils and such appliances as gas ranges and cooking stoves operating on other fuels was announced last month by Office for Emergency Management's Division of Priorities. The order limiting production of cooking utensils places manufacturers in three classifications with curtailment percentages based on past sales. The limitations do not apply to defense contracts of the Government or to public authorities owning or operating a project financed wholly or partly by the Government or any of its agencies.

■ ■

Ready for the Test

THE year end statement of George S. Hawley, president of the American Gas Association, on the progress of the gas utility industry for 1941 makes stimulating reading for any gas man. It is a statement of new records, in which customers served, gas sales, and gas revenues reached new all-time highs.

No part of this enviable record has been achieved as the result of some special advantage that the industry had been able to call out for itself from the defense program. On the contrary, it has been accomplished in spite of operating, maintenance and extension difficulties that increased in complexity and severity every day from January 1, 1941, until the close of the eventful year. It must be recalled that the tool and tool steel industries were the first to feel the effect of the call for increased armament production, and these industries are heavy users of industrial gas. It was due in a large measure to this demand that the total sales of industrial gas increased by 18% over the sales in this classification for 1940. Yet despite this unprecedented demand there arose not a single incident in which the gas fuel supply proved a bottleneck in the accelerated production schedules. And what is equally important the delivery of manufactured and natural gas for civilian consumption as a domestic and commercial supply of heat and energy continued without curtailment and without interruption.

Gas range sales were the highest for any year in the history of the industry,

2,400,000 units or an increase over the previous year of 38%.

Statistically, these achievements alone would indicate an industry working at a peak of efficiency and endeavor never before known in its long and honorable history. But superimposed over these normal labors, were the ominous preparations for defense against attack from the air, from possible saboteurs; the planning of procedures and the training of crews to repair any conceivable disruption of the service through enemy action.

The war time tests of the industry are certain to come, whether they be on the Pacific Coast or the Atlantic, or in the fields of the Appalachian or the mid-continent. But by the very evidence of its unfaltering and unfailing service in all-out defense, the great curtain raiser to the drama of all-out war, it has given America unmistakable promise of its competence to rise to whatever crisis the trying months and years that lie ahead may bring forth.

■ ■

The Appliance Market

WHAT lies ahead for the manufacturers and marketers of gas appliances? The United States has been at war barely a month, and it was to be expected that the country's abrupt entrance into a shooting war would throw the nation's productive facilities even farther off balance.

Regarding materials for the manufacturers, it is estimated that during the first quarter of 1942 the monthly average of iron and steel used for domestic stoves and ranges of all kinds will be cut 35% from the average used during the twelve months ending June 30, 1941. While faced with this gloomy fact, the manufacturers may find cheer in:

1. Appliance sales in 1941 reached an all-time high and even a curtailed 1942 might prove to be a good sales year.

2. That ingenious technical men are even now devising ways of manufacturing gas appliances with less and less use of critical defense materials. In further favor of the gas appliance is its relative simplicity of construction and its minor requirements for steel and other metals.

3. It is likely to become more and more apparent as the war goes on that the defense industries can use only just so much of the critical materials supply at any certain time. Therefore, the solution to the production problem for both industries engaged in producing war materials and those serving the essential needs of the civilian population lies in providing an intelligent system of allocation of supplies and in the timing of delivery of these supplies.

One thing is very certain and that is that 81,000,000 people must still eat cooked food, bathe in warm water, and be kept reasonably warm. It is the gas industry's job to perform this essential civilian service and while many a new range or new gadget cannot be sold to satisfy the whim of some opulent consumer, it is still apparent that ranges must be made and ranges must be sold to continue the service of the industry on the high level of efficiency which it has established.

■ ■

Pipe Line Potentialities

LAST month brought the news that two great natural gas pipe lines will be constructed to serve the Arsenal of the Democracy.

The first of these, publicly announced December 26, will be built by Hope Natural Gas Co., a Standard Oil of New Jersey subsidiary. This line, a 772-mile $30,000,000 project, will bring Louisiana and Texas gas to West Virginia. (See page 22.) The construction of this line may well prove to be the answer to the survey into the natural gas situation in certain sections of Ohio, Pennsylvania and West Virginia which the Federal Power Commission instituted last month in cooperation with OPM. From this survey of 85 operating gas utilities, FPC expects to find all the answers to the portending natural gas shortage in those states during the winter of 1942-43.

Construction of a second great pipe line appears imminent with the decision of the Public Service Commission of Wisconsn to grant to Wisconsin Gas Transmission Co., a Phillips Petroleum subsidiary, the right to build an 877-mile $28,000,000 pipe line from Texas into Wisconsin. (See page 22.)

■ ■

Production Priorities

OPM, late last month, replaced P-22 with Preference Rating Order P-100, which facilitates the acquisition of materials for the maintenance, repair and continued operation of property and equipment. The A-10 Preference Rating of the old order remains undisturbed.

This order effects the petroleum and natural gas industry in that it pertains to the discovery and development of oil and gas pools and the transportation of petroleum and its products, including natural gas.

From the Office of the Petroleum Coordinator last month came Conservation Order M-68, limiting the purchase, delivery or withdrawal from inventory of materials for production except for certain defined purposes.

Of particular interest to the natural gas industry is Section C-8, which grants material for the drilling or maintenance of gas wells in discovered or undiscovered natual gas fields (other than condensate) where the well conforms to a uniform well spacing pattern of not more than one single well to each 640 surface acres. Section C-9 is also of special note as it permits an equitable distribution of materials among existing property interests. Allocation of materials is made by the Director of Priorities, OPM, upon the recommendation of the Office of Petroleum Coordinator. Applications must be made by letter to OPC, using OPC Form PD-214a, OPC Form PD-214b, or OPC Form PD-214c.

■ ■

Project Ratings

A RULING last month by W. B. Hughes, staff advisor, Project Rating Section of OPM's Division of Priorities, indicated that in the majority of cases, project priority ratings will be given only when the value of the project is $25,000 or more, or in those cases where the suppliers number over twelve.

In GAS for February

THE war did not take the gas industry by surprise. For years its executives have been compiling data and formulating procedures to be followed in protecting its property and personnel against both the enemy within and the enemy without.

This valuable information is available from many sources. Some of it is general, some of it highly technical, and the editors of GAS have set aside the February issue to present a bibliography of pamphlets and books covering every phase of defense activity. In addition to the bibliography there will be articles describing the experiences of certain utilities in vital locations during the first month of the war. Other articles will outline general procedures to be followed in the guarding and camouflaging of plants and equipment; in measures taken to cope with fires; in rules for conduct during blackouts and in actual raids; and on advice issued to the public by the company on gas matters. The February issue of GAS will be a valuable reference book for every operating gas man.

ON DECEMBER 7, 1941, war came to the United States. Recoiling from the sudden fury of the attack on Pearl Harbor, the people of the United States are now tightening their belts and flexing their muscles and are ready and willing to meet any foe on any field over any period of time. A vital cog in the wheel of American production and American living is the natural and manufactured gas utility business. The war did not find this industry asleep.

Two years before the shooting began in Europe the gas industry started to prepare itself against a state of war here. Valuable data obtained from abroad, prior to and after hostilities developed, covering protection of plants, transmission lines and other facilities from air raids and other enemy action, including sabotage, have been distributed throughout the industry. Having thus anticipated the coming of war, the gas industry is well prepared to meet the tests that are sure to come.

In June of 1940 the executive board of the American Gas Association, under Walter C. Beckjord, then president, placed its services and its support at the disposal of those departments of the Government concerned with national defense. At that same time, President Beckjord appointed from the Association's membership a Committee on National Defense, headed by Geo. F. Mitchell, president of Peoples Gas Light and Coke Co., Chicago.

The gas industry's efforts to protect both itself and its consumers have made great progress during the 18 months that have elapsed since the formation of the Committee on National Defense. These activities were re-emphasized by a letter sent by President George S. Hawley, of the American Gas Association, on December 10, to President Roosevelt. This letter is quoted below:

Honorable Franklin D. Roosevelt,
The White House,
Washington, D. C.

Dear Mr. President:

The Executive Board of the American Gas Association, meeting December 10, 1941, reaffirms its pledges for full cooperation of the gas utility industry of America with our Government in the national crisis.

Together with Federal agencies, we have long since distributed information for the protection of our plants, wells, transmission lines, and other facilities. Measures have been adopted for the protection of civilian life and for the assurance of a vital fuel service to the homes and industries of America.

We are carrying out plans of close cooperation in the program of nutrition in the national defense.

We are equally ready to join in all necessary protection to the public resulting from air raids and other enemy action, including sabotage, in preparation for which we have issued information based on procedure in other countries at war.

Very truly yours,

(signed) GEORGE S. HAWLEY,
President.

President Hawley's letter brought the following reply from M. H. McIntyre, Secretary to President Roosevelt:

George S. Hawley, Esq., President,
American Gas Association,
420 Lexington Avenue,
New York, N. Y.

My dear Mr. Hawley:

The President wishes me to thank you for your letter reaffirming the pledge of cooperation and extending a wholehearted offer of service on behalf of the Executive Board of the American Gas Association. This assurance, together with the voluntary responses from practically every large organization and group in the country, gives concrete evidence of a determination to spare no effort and a readiness to assume any sacrifice necessary to a successful outcome in this crisis.

M.H. McINTYRE (s),
Secretary to the President.

One of the nation's prime sources of energy, gas fuel, today plays an all-important part in speeding up the production of war materials. It is inevitable that gas fields will be utilized to the utmost limits of their potentialities, especially in highly industrialized areas. The organization of a complex and wide-spread industry that will enable it to function at top-speed with greatest efficiency is no simple task. Gas industry executives, with great ability and wide experience, have been applying themselves to this task for many months past.

Public Relations

One of the most important tasks facing public utility companies all over the country is the quick and accurate dissemination of information to the general public. Most important in accomplishing this is coordination of authority in order to prevent duplicating or conflicting orders. The Office of Civilian Defense, Washington, D. C., has issued the following statement covering procedure which household gas users should follow during air-raid alarms:

"The American Gas Association recommends that you make no attempt to shut off the main gas valve. Simply turn off the stove burners that are lit but not the pilot light. If the *house* is badly damaged the main gas valve should be shut off. Once the main valve is turned off, for any reason, do not turn it on again yourself. Call for a trained man. Your local gas company is working out further detailed directions with your local defense council. Watch for these instructions, then follow them."

Pacific Coast: The gas utilities have taken and are taking the necessary steps both to inform the public, to protect plant and property and to foil the saboteur.

San Francisco, Calif.: The Pacific Gas and Electric Co., according to word received from vice president and general manager P. M. Downing, is taking many precautions to safeguard their personnel and property and are endeavoring to reassure the public that they should not become alarmed regarding gas or gas appliances but should follow instructions issued publicly by defense bodies.

Questions as to the probable consequence of damage to holders by bombs have been raised by people living in the vicinity of gas holders. The Pacific Gas and Electric Co. has endeavored to assure them that there is no undue hazard present in this case and have related to them the performance of many holders in England which have been damaged, often with subsequent fire but never with any attendant explosion.

At all times, of course, the Pacific Gas and Electric Co. endeavors to keep itself prepared for emergency in the

way of broken gas mains and at the present time it is being even more actively on the alert to see that all of its men, equipment, and materials are ready and available at all times.

Portland, Ore.: The advertisement shown below was published in the *Oregon Journal* on December 21 and in the *Oregonian* on December 22, in order to pass on pertinent information to the 90,000 consumers served by Portland Gas and Coke Co. in Oregon and Washington. To quote from the ad:

> "The general public has become newly conscious, within the past two weeks, of all the intricate machinery and plants and organizations of people that have supplied these public services with silent efficiency for so many years. And the fact that these inquiries show so little actual anxiety about any of these services, such as gas and power, transportation and communication, is another evidence of the remarkable coolness with which the people of Portland and vicinity have met all alarms since Sunday morning, December 7."

Middle West: Northland Natural Gas Corp., Evart, Mich., has sent out a bulletin to its consumers under the following title: "In Your Own Interest, In Our Interest, and in the Interest of Whatever May Be in the Unpredictable Future, We Ask That You Conserve Natural Gas."

This conservation is asked, the bulletin states, not because of impending shortages of natural gas but because of restrictions on materials used in development and expansion and because it is better to have "some left over" than "not enough."

Headings in the bulletin warn the consuming public to: (1) Maintain Proper Humidity; (2) Maintain Uniform Heat; (3) Do Not Maintain Too High Room Temperatures; (4) Introduce "Fresh" Air; (5) Use Proper Appliances; (6) Take Good Care of Your Gas Appliances. The bulletin closes with the thought that these suggestions are made in the interest of all of us.

New York City: Five gas companies in the New York metropolitan area on December 18 jointly issued instructions to the public on what to do with gas appliances when and if New York is actually bombed. These companies—the Consolidated Edison Co. of New York, Brooklyn Union Gas Co., Brooklyn Borough Gas Co., Kings County Lighting Co. and Westchester Lighting Co.—plan to distribute the instructions to customers by newspaper advertisements, leaflets, bill enclosures, and other methods. Employees have also been instructed what to tell inquiring customers.

The announcement (see next page) concludes with the advice that "Gas service and appliances, including their pilot lights, should be operated in the normal manner until the actual air aid precautions become necessary."

Special emphasis is given to the following statement:

"It is not necessary nor advisable to turn off the gas at the meter unless bombs are actually falling in your immediate vicinity."

The announcement continues:

"Bombs falling in immediate vicinity" means when they have fallen close enough to rattle windows violently and to cause you to feel a distinct jar. In such a case there is the possibility of local damage which might affect your gas supply.

The instructions include a drawing of a gas meter, showing the inlet cock on the left hand side of the meter—and a sketch showing the cock when closed. It is pointed out that a medium sized monkey or stillson wrench will fit this cock and should be kept handy at all times. Customers are urged to turn the meter inlet cock off or on slowly.

The announcement also gives instructions on what to do after the bombing is over, if it had been necessary to turn off the gas.

■ ■

Labor

Payment of Overtime in Defense Bonds: While workers cannot waive their rights to time and a half for overtime after 40 hours, they may voluntarily accept straight time in cash and the balance in defense securities, Baird

About Your Gas Service

A message to our 90,000 customers and the public:

The Gas Company, like all other suppliers of essential public services in the daily life of the community and in the national defense, is receiving occasional inquiries about service during war times.

These questions are appropriate and natural. The general public has become newly conscious, within the past two weeks, of all the intricate machinery and plants and organizations of people that have supplied these public services with silent efficiency for so many years. And the fact that these inquiries show so little actual anxiety about any of these services, such as gas and power, transportation and communication, is another evidence of the remarkable coolness with which the people of Portland and vicinity have met all alarms since Sunday morning, December 7.

• • •

No doubt we face a long war, but our cities are already settling down to an efficient and orderly routine of living. The utilities and other public services have been making detailed plans for months to preserve normal service. The Gas Company, for one example, has 750 employees who, with their own defense tasks and their regular jobs well in hand, have energetically joined with civilian defense units of various kinds. It is a veteran organization of engineers, chemists, artisans and workers—ready, trained, experienced and able. In these days, every *expert* is at work—in telephone, telegraph, radio, power, water, gas and all vital services.

• • •

Service maintenance methods used in England under the severest war-time conditions have been thoroughly studied by American gas companies. Gas service in London and other British cities successfully came through the most intensive bombing raids in history.

One interesting but little-known fact is that gas holders (or "tanks" or "reservoirs") are explosion-proof and fire-proof by nature. An incendiary bomb dropping into a gas holder is instantly smothered for lack of oxygen. No gas holder in England has ever caused damage to surrounding citizens or property when bombed. Experience has shown that it is not worth while to bomb gas holders with either incendiary or explosive bombs.

• • •

Our gas manufacturing plant, which is strongly guarded like all utility and similar property, can be blacked out on 60 seconds' notice.

Gas mains and pipes are, of course, safely buried underground everywhere. The only complete interruption of gas service in the history of the Portland Gas & Coke Company happened 47 years ago, at the time of the great 1894 flood when the old gas works at the foot of Flanders Street was flooded.

• • •

Finally, let me explain an important feature of your gas supply system. Portland gas is manufactured from oil. After the gas-making process is finished, large quantities of residues are left, rich in chemicals and substances from which important industrial and defense by-products are manufactured.

During normal times our customers have benefited from the sale of these by-products because we used the revenue from our chemical manufacturing operations to reduce the rates for gas service to our customers. Portland gas rates thus became the lowest of any city in the country not supplied with natural gas.

But now the manufacture of many of these by-products assumes new and greater significance because they have become essential to defense industries. *Thus meeting the industrial demands of war as well as the daily needs of 90,000 gas users makes it doubly important now to keep our plant steadily in production 24 hours a day.*

• • •

Every member of our organization knows and accepts his increased responsibilities, and on behalf of all of us I wish to assure you that this big and loyal force is fully prepared to meet them.

Portland Gas & Coke Company

Paul B. McKee.

President

Snyder, acting administrator of the Wage and Hour Division, U. S. Department of Labor, ruled December 17.

Waiting Time During Blackout Not "Hours Worked": Time spent by employees on the premises of an employer covered by the Wage and Hour Law during blackouts or air raid alarms where no work is done need not be compensated for as "hours worked," Acting Administrator Baird Snyder, Wage and Hour Division, U. S. Department of Labor, declared today.

Several inquiries on this point had been received by Mr. Snyder from West Coast factories.

Wage-Hour Stand on Guards and Watchmen Given: The Federal Government, States, counties, municipalities or other political sub-divisions of States are not "employers" under the Fair Labor Standards Act; and men hired as guards by States or political sub-divisions of States during the war emergency may be employed without respect to the requirements of the Wage and Hour Law, it was announced December 10 by Baird Snyder, acting administrator of the Wage and Hour Division, U. S. Department of Labor.

Where employers other than the political sub-divisions of States above mentioned, either employ additional guards or, because of the lack of available man-power, lengthen the hours of guards already employed, the wage paid to such guards as are engaged in interstate commerce or in the production of goods for commerce, must meet the minimum requirement of 30¢ an hour—that is, $12 for a 40-hour week—unless a wage order sets a higher hourly rate (not over 40 cents an hour of $16 a week) for the industry. Time and one-half the hourly rate must be paid for hours worked over 40 each week. Guards or watchmen hired by employers who are in commerce or producing goods for commerce, and whose work it is to protect such activities conducted by their employers, are subject to the Fair Labor Standards Act, the courts have held, even though they do no productive work.

■ ■

Home Service

The home service departments of gas utilities in the United States, no doubt. have already received much benefit from the experiences of home service activities in England. The British gas industry has published for distribution to the public a mass of bulletins dealing with safety measures and economics in gas utilization. One learns from correspondence with those in England that the British meet their problems as they come and tackle them with relentless vigor. The following letter from Eileen Murphy, director of Home Service for The British Commercial Gas Association, is proof enough of this statement:

IMPORTANT TO ALL GAS USERS!

What to do should bombs fall near by

Instructions issued by the Civilian Defense Committee of the City of New York state:

"If bombs are falling in your immediate vicinity shut off the control cock on the inlet to the gas meter.

"If after the all clear signal you do not feel confident in turning on the gas supply and relighting all appliances obtain the services of a plumber or some other qualified help to do so."

It is not necessary nor advisable to turn off the gas at the meter unless bombs are actually falling in your immediate vicinity.

"Bombs falling in immediate vicinity" means when they have fallen close enough to rattle windows violently and to cause you to feel a distinct jar. In such a case there is the possibility of local damage which might affect your gas supply.

INLET COCK TURN OFF HERE — OPEN

INLET COCK IS ON LEFT HAND SIDE FACING GAS METER

PICTURE OF COCK WHEN CLOSED

The above sketch shows the location of the control cock of the gas meter and its "on" and "off" position. A medium sized monkey or stillson wrench that will fit this cock should be kept handy at all times. In turning the meter inlet cock off or on, do so slowly.

WHAT TO DO AFTER BOMBING

If you are accustomed to light your own gas appliances and are thoroughly familiar with their operation, the following procedure may be followed in turning the gas on:

FIRST—*Go to each gas appliance and see that all burner and pilot valves, keys or cocks supplying gas to the burners are turned off. If you have pilots not equipped* with a turn key or valve, it is not necessary to turn these off.* (*Usually found on stoves only.)

SECOND—*Go to meter and turn on inlet gas cock which you closed during the bombing. Watch the dial on your meter for at least ten minutes to see there is no movement of any hand on the dial. If there is movement, reclose valve immediately and get in touch with your plumber or gas company. If there is no movement on the dial, you may proceed as follows:*

THIRD—*Go immediately to your gas range and turn on one cooking top burner and apply match until burner lights and burns with the normal blue flame. If the gas range has a pilot light, it should now be lighted. Other gas appliances such as refrigerator, water heater, etc. should then be lighted in the normal manner.*

If you are not entirely certain of your familiarity with the proper method of lighting and operating your gas appliances, call the services of a licensed plumber or other qualified help to turn on the gas.

Special Note to Apartment House Tenants and Owners: If the gas meter is not situated in your apartment, the superintendent of your building, who should be familiar with the location of all major gas valves, will handle the control of gas supply in the apartment house during an actual bombing. Determine that the gas cocks on all appliances are closed before re-establishing gas service to any apartment.

Gas service and appliances including their pilot lights should be operated in the normal manner until the above precautions become necessary.

The Hon. Fiorello LaGuardia, Director, Office of Civilian Defense, said...

COOPERATE...DO YOUR PART!

Whether or not we will have blackouts depends upon the decision of the Army.... During a blackout everything must be kept going—at home—at work—at places of recreation. We must adjust ourselves without interfering with industrial, commercial, or business or family life.... Make the necessary preparation so that no lights will be visible from the outside if blackouts are necessary.... It is not intended that you should remain in the dark—that's depressing—and it isn't good for the children. So keep your home cheerful—keep the lights going.

BROOKLYN BOROUGH GAS COMPANY
BROOKLYN UNION GAS COMPANY
CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.
KINGS COUNTY LIGHTING COMPANY
NEW YORK AND RICHMOND GAS COMPANY (Staten Island)
WESTCHESTER LIGHTING COMPANY

Advertisement published in New York

Arthur Rohman, GAS,
1709 West Eighth Street,
Los Angeles, Calif.

Dear Mr. Rohman:

"It was very nice to have your letter of 8th September, I shall look forward to seeing your Bulletin. Mr. DeBard is certainly making a lot of new friends for me. I hope I shall survive to meet you all one day.

"Yes, the British Gas Industry has to face a great many difficulties and problems due to war conditions. However, each problem is surmounted as it comes along.

"We are now cooperating with the Government on a Campaign for economy in fuel. We also help the Ministry of Supply on the Campaign to save waste paper. The English, even in 1941, like to have at least one coal fire in their homes. Quite a large amount of scrap paper may be used every day to light these coal fires. Our Gas Poker Campaign has helped to make more waste paper available for repulping.

"Home Service is very active of course, with food rationing, and food shortages, housewives are very puzzled how to cater for their families; they naturally turn to the Home Service Departments for assistance. As there are over 8,000,000 gas cookers in use in this country, you will realise that the Gas Industry felt it had an important part to play in teaching housewives the economical use and preparation of foods available. In this Campaign we are supplementing the work of the Ministries of Health, Food, Agriculture, and the Board of Education. In fact, gas showrooms are being looked upon as very useful centres for general war-time services.

"There are very few—if any—immediate sales to be made, but we are keeping the goodwill of our customers until better times."

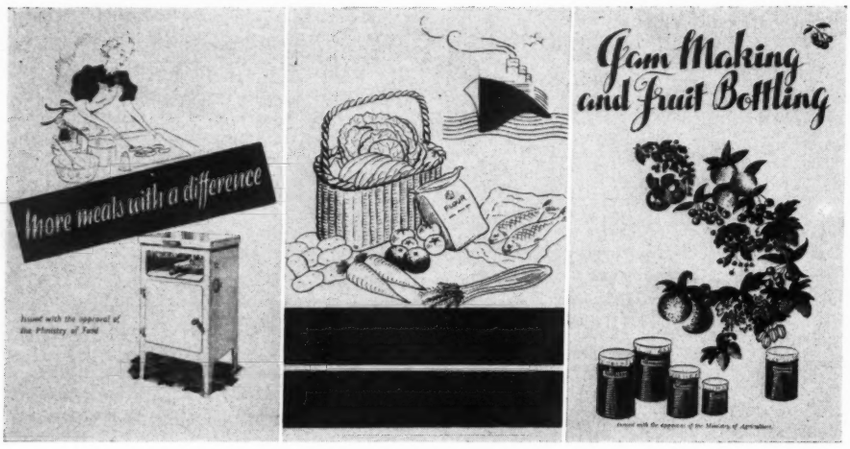
At this time the Government in England has called upon the consuming public to exercise the most rigid economy in all kinds of fuel. The British gas industry, and in particular its home service workers, is playing a most important part in accomplishing this purpose. One of the bulletins issued by the British Gas Industry is entitled "War Factories Need More Gas—How Much Can You Save?" The bulletin lists helpful hints on how the consumer can save gas on room heating, water heating, cooking and lighting. A box in the bulletin suggests that gas can be saved and rations made to go further if several small families arrange to club together for the cooking of the main meal. It further suggests that the consumer read his meter regularly so that it will be easier for him to check waste. The front covers of some of these bulletins covering various phases of gas cookery in war-time are reproduced on this page.

In the United States, since the advent of war and even before, the home economics departments of gas companies have noticed the greatly accelerated interest on the part of the housewife in nutrition and vitamin cookery. Standing room only at cooking demonstrations is not uncommon and the trend is definitely toward stretching the food dollar to compensate for increased cost.

With the coming of actual war, the home service departments of several gas utilities have mobilized themselves for emergency service.

As an aid to home service departments, the Residential Section of the American Gas Association has issued Interim Bulletin No. 62, "The Home Service Departments in the Gas Industry Cooperate in National Defense."

Statistics reveal that about 25% of the men drafted in 1940 were not accepted because of poor health. This fact, alone, reveals the necessity for continued and increased work on the



Samples of pamphlets distributed by the British Gas Industry.

part of the home service departments of gas utilities.

Home service has always been interested in community activities, and as community groups are now becoming more health conscious, home service automatically will consider better balanced menus, the adequate diet, how to buy food more wisely and how to cook it better with the modern gas range because it will save food, fuel and time. It is timely to interpret our work with customers by putting the emphasis on better health, time and money saved and so do our bit in helping our nation in its defense program.

Los Angeles, Calif.: A plan whereby the entire home service organizations of the Southern California and the Southern Counties Gas companies, including the services of a corps of graduate home economists, demonstration kitchens, auditoriums, and cooking facilities, will be utilized by the American Red Cross in a civilian training program in nutrition and canteen work throughout Southern California, is being worked out between Red Cross and gas company officials with plans to open the first classes this month.

Tentative plans call for the establishment of training centers in gas company home demonstration auditoriums throughout the Los Angeles metropolitan area, and in other communities inland and up and down the coast. These will be in charge of gas company home economists, all of whom are graduate home economists and all of whom have received training in Red Cross nutritional work. They will be directed by Gladys B. Price, home service supervisor, Southern California Gas Co.

Classes will be open to everyone who desires to take the training. It is planned to give each class a course of two hours instruction weekly over a period of 10 weeks. Subjects in the nutritional field will cover food values, vitamins, purchase and use of surplus commodities, low cost buying, preparation of practical menus, suggestion on marketing, food preservation, and so forth.

The canteen course, which is given in combination with the above, will include buying and preparation of food in quantities, organization of emergency cookery, instruction in the use of equipment and utensils in large scale cooking operations, procurement of essentials for an emergency feeding program, and maintenance of civilian morale.

Those who complete the course will be given a Red Cross certificate, and will be qualified to be called for canteen work in emergencies.

Similar activities are reported by Oklahoma Natural Gas Co., Tulsa, and Pacific Gas and Electric Co., San Francisco.

Tulsa, Okla.: Oklahoma Natural Gas Co.'s Home Service Department has been active in the all important home defense nutrition program. The program was inaugurated in the company's specialized 13-week program on menu planning offered in cooperation with local grocers throughout the territory served. "Victual Vitals" was the subject dedicated to give Mrs. Consumer, quick, easy to read and understandable information on nutrition needs.

As the result of this, requests were made for radio talks on several stations which were prepared and presented by the local Home Service Directors. One hour illustrated lectures, using current nutrition charts prepared for national release, have been given for leaders of Campfire Girls and Girl Scout groups P.T.A. groups, America Association of University Women, and women's study groups.

This important information is also being used in dealer salesmen's classes as an important ally in present day selling methods. A unique departure has been the presentation of lectures before men's civic club groups in which daily diet requirements were checked against the menu served, as an effective method of impressing those in attendance with the importance of the nutrition movement. "Foods for Fitness" pocket-size cards have been made available to customers and school students at the request of educators.

■ ■

A Government Canteen

NOT for the first time since the introduction of communal feeding, gas is playing an important part in helping to supply 1*s.* 2*d.* lunches to 1300 evacuated civil servants "somewhere on the north-west coast" each day. The lunches are hot and comprise three courses.

On Monday the latest example of community feeding was put into operation with conspicuous success.

H. Crewe, the chef, formerly in charge of the kitchens at the Hotel Majestic, Lytham St. Annes, told *The Gas Times* representative that shortly he expects to be asked to prepare lunches for 3000 daily. If he had his way gas would be used exclusively in all kitchens. Although he does not realize it he is the gas industry's staunchest publicist.

Food is kept warm and served from a 30 ft. gas fed hot plate, and that is by no means the only part gas plays in these huge kitchens.

There are two massive 25-gal. boilers for coffee, three veritable giant pots which hold 50 gals. of vegetables and stock, and two stock pot boilers. The fish fryer is one of the largest in the provinces.

The 16 vegetable steamers have an almost insatiable appetite and require 6 cwt. of potatoes daily. The steamers have automatic feeders and are the latest of their kind to be supplied since the war began.

The first lunch included 2 cwt. of carrots and 80 quarts of peas in addition to 40 large cabbages.

Anything from a slice of toast to a turkey can be cooked in a modern baker's oven, which has drawer-like shelves and is large enough to take several human beings.

In addition to the luncheon room which seats 284 at each of the three or four sittings, there is a cafeteria, also largely dependent on gas, where some 500 teas are served every afternoon. — *The Gas Times*, published in London, England.

Saving of St. Paul's

THE following article, from a special correspondent of *The Times* (London daily newspaper), giving an account of the part played by gas men in connection with the removal of an unexploded bomb from near St. Paul's Cathedral:

"Civilian workers shared gallantly in the grand piece of work which saved St. Paul's Cathedral for Britain and the world. At one time the crater made by the time bomb was licked by flames from a burning gas main. This and a second fire which broke out later nearby were put out by workers of the gas company who toiled with the same disregard of danger as was shown by the men of the Royal Engineers who finally removed the bomb.

"But they worked deftly and quickly; they got through in an hour or two work which normally, taking all the usual precautions, would have occupied two days. Time was all important, and it was because these men overcame the two outbreaks of fire that the soldiers were able to get through to the bomb, remove it, and take it where it could be exploded without causing a major disaster.

"The start of this job was reported to headquarters in matter of fact language: 'Attended at 4 o'clock Thursday morning and found a leakage in the crater of an unexploded bomb . . .' So the story goes on to the final sentence: 'Job cleared up by 4:30. The police were informed so that the R. E.'s could resume operations.'

"But in between brave men had worked hard and long, without refreshments, and within a few feet of a heavy bomb which might have gone off at any moment. A foreman who was in charge of the operations for some hours said that when he arrived he found two Royal Engineers badly gassed.

"They were about to be given milk, which he knocked away, for it was the wrong treatment, and he and a mate applied artificial respiration.

"All this time the soldiers and the workers of The Gas Light and Coke Company had a wide area around St. Paul's entirely to themselves. All noise and movement in this usually busy part of the city was still. The quiet was unreal, the men say; indeed where all around is bustle as a rule it was almost sinister and certainly disquieting.

"I was privileged yesterday to visit the underground headquarters from which the battle against damaged gas mains is directed. Thorough precautions have been taken. If these headquarters were to be bombed out of action two alternative centers are ready to be brought into use.

"As it is, it is working smoothly and continuously, quickly reducing to a minimum damage and inconvenience caused by Nazi bombs. On a large map is shown the 540 square miles of territory of The Gas Light and Coke Co., and pins with tops of different colors show exactly where gas mains have been damaged by bombs and the state of repairs.

"In charge is the distribution engineer. In peacetime his job is to see that the distribution of gas is fully maintained; in wartime his job is essentially the same, except that he has someone deliberately working to make his task more difficult.

"In peacetime he has his gangs ready to deal with damage or outbreaks of fire; in wartime he is much more prepared. He is running a continuous shift system, and wherever a bomb may drop causing fire or damage to a main he can dispatch a group of tough and skilled workers, who in quick time will have a fire out and in not much longer will have the main repaired and working again.

"The map, with its colored pins, is an encouraging pointer, for it tells a tale of triumph. As fast as the bombers damage any gas mains the company is repairing them. One pin stands for 'job completed.' It is in steady demand as another damaged main is brought back into use.

Men here work and sleep on the job. The company's shock troops are ready to go into action over the 24 hours of each day. I saw a cradle in one underground passage, and the distribution engineer explained: 'The foreman sleeps on the job, and whenever there is a raid his wife and baby come in here for shelter.'"—*The Gas Times*, published in London, England.

A Campaign That Sold Defense Bonds

IN A four-day campaign, The Timken Roller Bearing Co., Canton, Ohio, sold $36,417.10 in Defense Savings Stamps. The campaign, one of the pioneer efforts of its kind by a private corporation, enlisted the sales appeal and point-of-sale pulling power of eight attractive "Timkenettes," Timken factory girls. These young ladies costumed in specially designed red, white and blue outfits, sold Defense Savings Stamps on the streets, in offices, and delivered them to residential districts in Canton.

The girls were also used widely in promotion over the radio and in other publicity methods in the four-day campaign. Headquarters for the campaign were set up in a Defense Stamp booth on Canton's courthouse square from where Timken sponsored daily broadcasts. Full-page advertising in newspapers and other publicity directed the public to special features of the campaign.

One of these features was a "Mystery Man." On the last day of the campaign, the "Mystery Man," an unidentified Canton resident, sought out persons who had purchased Defense Savings Stamps at the booth and who had received an especially designed receipt, and awarded prizes ranging from $1 to $5, for a total of $100 in prizes. Approximately 75% of those persons who received prizes returned to the booth immediately and purchased more stamps with their prize money.

Company executives asserted that the campaign was carried out with a nominal expenditure, and, with this initial impetus, the Defense Savings Program was carried on in Canton under the supervision of the Ohio State Defense Savings Committee.

LOOKING at 1941

By J. BREWER AVERY

ALREADY mobilized to meet the unprecedented peacetime fuel needs of a nation grimly preparing its defenses in an unsettled world, the gas industry was ready to meet the challenge of a war that unexpectedly roared out of the Sunday morning skies over Pearl Harbor in the last month of 1941.

As one of the country's prime energy sources, gas is destined to play an increasingly important part in speeding up the production of essential war materials. Equally vital, though less spectacular, however, is the basic contribution it will make to the eventual American victory by continuing, with greater efficiency and increased economy, its regular job of cooking the average American's meals, heating his water, preserving his food and warming his house.

How thoroughly gas is discharging this double duty to factory and home is clearly revealed in the year-end figures on last year's operations that were recently released by the American Gas Associatinn. In 1941, gas was served to a total of 18,618,000 customers. An increase of 627,000 over 1940, this figure marked an all-time high in the number of meters connected in any one twelve month period.

Of the new customers, 364,000 were added by natural gas operating companies, and the remaining 263,000 by mixed and manufactured gas companies. This was a 4.7% gain in natural gas consumers, and 2.6% gain in manufactured gas users.

To determine those sections of the country which contributed most heavily to the expected record number of gas installations, the editorial staff of *GAS* recently queried representative distributing companies in various parts of the country on the average number of new services they had connected each month in the first three quarters of the year.

Answers were received from companies operating approximately one-third of the total number of active meters in service at the end of 1940. The tabulation of the results, with the states arranged in the order of the largest number of meters connected in 1941, appears in Table No. 1. The number of new customers was estimated by applying the percentages obtained from the meters on which reports were received to the total number of meters in service in each state at the end of 1940.

Geographical Break-Down

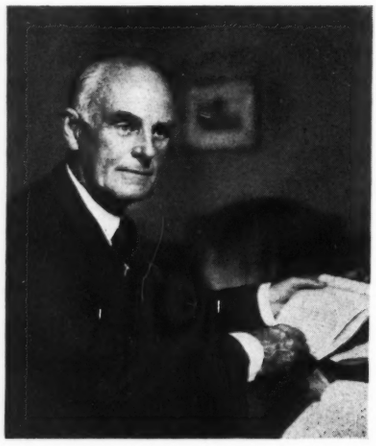
In studying the results of this survey presented in Table No. 1, it is interesting to note that, of the first 10 states in the list, six (California, Michigan, Ohio, Texas, Illinois and Louisiana) are predominantly natural gas states, one (Pennsylvania) is about equally divided between natural and manufactured gas, and only three (New York, New Jersey and Massachusetts) are strong manufactured gas areas.

This list of the 10 leading states in the connection of gas meters also coincides very closely with the areas in which the greatest increase in industrial activity might be expected as a result of war materials production and general military activity.

In these days when national defense work is resulting in many changes of the population distribution in the United States such a study as this offers valuable data for the planning of pipe line extensions, and for the institution of regional sales campaigns of both gas services and the appliances which use gas.

For these purposes, figures for percentage of gain in the third column of Table No. 1 must also be considered. Secondary population changes are revealed by arranging the states in this order. The 10 leading states on the basis of percentage gains are: Louisiana, Tennessee, Arizona, So. Carolina, Virginia, Florida, Utah, Michigan, Arkansas and Texas. Significantly, most of these states are in the south and may well be confirming evidence of the growing industrial progress made by the southern sections of the nation in the past several years.

Based on the figures obtained from the reported meters, a national average of increase was established and applied to those states from which no information was received. By adding these arbitrarily computed state totals to those based on answers to the survey, a total increase of 583,693 new services was predicted for 1941. This prediction was just 43,307 less than the actual total of 627,000 new consumers reported by the A.G.A. at the end of the year.



GEORGE S. HAWLEY
President
American Gas Association

GEORGE S. HAWLEY, recently elected president of the American Gas Association for 1942 at the annual convention in Atlantic City, has long been identified with the gas industry as an outstanding company executive, and an active leader in Association activities, as well as an active participant in the national business life of the country.

Since 1928 he has been president of The Bridgeport (Conn.) Gas Light Co. where he formerly served in the capacity of vice president and general counsel. He is also well known in Bridegport for the valuable contributions he has made to the civic and philanthropic projects of that community.

His work in the gas industry has carried him to the presidencies of the Connecticut Gas Association, the Society of Gas Lighting, the New England Gas Association, and the Guild of Gas Managers of New England.

Mr. Hawley is also a vice president of the United States Chamber of Commerce and a director of the following organizations: Connecticut and Bridgeport Chambers of Commerce, American Gas Association, Bridgeport Hydraulic Co., Black Rock Bank & Trust Co., Bridgeport People's Savings Bank, and Bridgeport-City Trust Co. He is a member of the American, Connecticut and Bridgeport Bar Association and the Connecticut Manufacturers Association, and of various clubs and engineering associations.

Mr. Hawley's legal training (he was admitted to the Bar in 1915), his wide experience in both the gas industry and the nation's business, and his proven ability as an executive assure the A.G.A. of wise and competent leadership in this year when war has added greatly to the problems the gas industry and the Association must solve.

1941 Uptrend

The upward trend of the industry last year was also maintained in the volume of gas delivered. The combined gross total of natural and manufactured gas sales was 2,005,263,000 M.c.f., a gain of 9.5% over the 1940 level. In the sale of gas, natural gas continued as the leader with 1,600,336,000 M.c.f., up 11%. Manufactured gas gained slightly to reach a total of 404,927,000 M.c.f., or about one-fourth the sales of natural gas.

Revenues for the entire industry reflected the expansion of the industry to reach a new high of $909,441,000. Of this aggregate, $522,053,000 was grossed by natural gas operators, and the balance of $387,388,000 by manufactured gas operators.

Significantly, gas sales for industrial purposes showed the largest percentage of increase with an average for the entire industry of 18%. In new industrial customers, manufactured gas showed a loss as compared to last year of minus 5.7%, but natural gas continued its forward progress with a figure of plus 4.3%.

The total production of natural gas for last year, according to preliminary estimates of the A.G.A., will come to approximately 3 trillion cu. ft., including the amounts used in the manufacture of carbon black, and for field purposes. Natural gas also supplied approximately 204 billion cu. ft. of gas for use in the generation of electric power.

In the sale of gas appliances, all previous records were broken in gas range deliveries last year. Altogether, 2,400,000 units were installed. This was an actual increase over 1940 of 657,000 units, for a percentage gain of 38%. The year 1941 thus became, according to the report of the Association of Gas Appliance and Equipment Manufacturers, the most successful gas range selling year in history.

Figures for the sales of other appliances reveal that 750,000 automatic gas water heaters were sold in 1941, that furnace, boiler and conversion burner sales were up 50%, and that gas refrigerator sales were well ahead of last year in many localities prior to the application of production restrictions to all automatic refrigerator production.

To organize a complex and widespread industry so that it will function with smooth efficiency under emergency conditions is no simple task. Yet this is the objective to which most gas industry executives of ability and experience have been applying themselves since the outbreak of hostilities in Europe two years ago.

TABLE NO. 1. ESTIMATED NEW SERVICE CONNECTIONS IN 38 STATES DURING 1941

(Based on data received from companies operating approximately 1/3 of the total meters in service at the end of 1940)

State	Total Services End of 1940	Estimated New Services Connected in 1941	% of Gain During 1941	% of Services on which Reports were Received
CALIFORNIA	1,810,340	76,034	4.20	91.0
NEW YORK	3,097,470	49,559	1.60	10.8
MICHIGAN	811,630	49,509	6.10	26.6
OHIO	1,354,200	48,615	3.59	33.8
TEXAS	730,640	41,938	5.74	85.9
ILLINOIS	1,448,980	35,400	2.45	5.9
NEW JERSEY	972,660	34,626	3.56	6.2
LOUISIANA	210,740	23,518	11.16	2.2
PENNSYLVANIA	1,628,640	23,515	1.45	42.5
MASSACHUSETTS	845,250	20,116	2.38	20.9
INDIANA	411,120	18,623	4.53	69.5
WEST VIRGINIA	208,920	11,950	5.72	30.0
VIRGINIA	146,000	11,154	7.64	7.7
TENNESSEE	89,420	9,451	10.57	13.3
MARYLAND	285,720	9,447	3.66	82.1
OKLAHOMA	294,010	8,996	3.06	9.4
MISSOURI	432,920	8,658	2.00	61.6
WISCONSIN	376,950	7,953	2.11	67.9
IOWA	205,390	7,928	3.86	28.4
FLORIDA	116,490	7,478	6.42	20.5
MINNESOTA	281,890	7,019	2.49	51.7
COLORADO	110,830	6,328	5.71	83.7
KENTUCKY	196,040	6,096	3.11	48.3
KANSAS	238,410	6,079	2.55	3.3
CONNECTICUT	311,250	5,913	1.90	23.5
ARKANSAS	85,880	5,066	5.90	1.2
ARIZONA	39,420	3,886	9.86	45.0
ALABAMA	87,560	3,309	3.78	55.8
NEBRASKA	131,490	2,721	2.07	70.3
SO. CAROLINA	29,030	2,662	9.17	33.3
MONTANA	53,020	2,608	4.92	15.6
WASHINGTON	70,960	1,986	2.80	69.2
UTAH	34,415	1,930	6.34	100.0
OREGON	93,370	1,764	1.89	92.9
RHODE ISLAND	131,220	1,522	1.16	98.8
NEW HAMPSHIRE	32,440	194	.60	38.7
VERMONT	17,700	145	.82	40.8
IDAHO	2,040	31	1.53	76.5
	17,424,455	563,727		

National Defense

In recognition both of the growing seriousness of the international situation, and of the valuable contribution gas would make to the imminent war effort of the United States, Harold L. Ickes, Secretary of the Interior, provided for the co-ordination of gas industry defense activities in collaboration with the government in October by creating a natural gas and gasoline section of the Office of the Petroleum Coordinator. Paul Raigorodsky was made head of the office and one of his first acts was to appoint Thomas R. Weymouth, a former vice president of Columbia Gas and Electric Co., and recipient in 1941 of the Charles A. Munroe award, as consultant on natural gas.

Mr. Ickes' action made it possible for the natural gas industry to coordinate all its activities in the production and transmission of gas, in recycling operations, and in the manufacturing, processing and transportation of all derivatives of natural gas.

In the nation's all-out defense effort, gas fuel has stepped out in 1941 to help factories, plants and shops break bottlenecks all along the line. Today the gas industry is playing a far more extensive and vital role than was possible in the last war, according to the report of the American Gas Association. New large-scale heating processes and methods have been evolved and developed which, when applied to the instruments of modern warfare, make certain the superior equipment demanded by the Army, Navy and Air Corps.

The modern tank—a mobile fortress—affords a good illustration. Gas is used for some fifteen different heating operations in hardening the all-important armor plate which must be hard enough on its outer surface to offset artillery fire and sufficiently tough and resilient on its inner surface to prevent shattering. To approach this quality of product in the last war would have required a heating cycle of from

400 to 600 hours in length. Today, a far superior result can be accomplished in about 100 hours, thanks to extensive technical research.

In today's modern American shipyards will be found gas-operated furnaces varying in size from an ordinary shoe-box for soldering and rivet heating, up to the size of a five-room house and operating at 1200 degree temperature for the annealing of a complete gun turret 50 feet in diameter, weighing 40 tons. This operation extends over a period of hours and uses more than 1,000,000 cu. ft. of gas for each anneal. Furnaces of this type are the largest in the world, and when not in use for annealing, they are equipped with gas-fired unit heaters and used as a shop.

Shipments of gas-using equipment for industrial use are at a peak, the A.G.A. report continues. Firms producing this apparatus are expanding and rapidly going on a 24-hour operating schedule.

From giant open hearth and reheat furnaces in the nation's great steel mills to the tiny torches used in making delicate instruments for bombers, industrial gas equipment is setting a pace that is speedily helping to produce munitions of every character. The demands of the hour, speed of production without compromise of quality, are being met successfully wherever industrial heating utilizes gas fuel.

A Thousand Uses

A few of the thousands of ways in which gas fuel is used to implement and accelerate the war effort are:

The hardening and drawing of projectiles and gun barrels, annealing cartridge cases, stress-relieving gun turrets, forging aluminum airplane propellers, carburizing engine parts, melting glass for the manufacture of optical range finders, heat-treating horseshoe nails for the cavalry, manufacture of textiles for the armed forces and of silk cloth for parachutes.

In army camps, projects and commercial establishments serving soldiers and defense workers, gas is used in rapidly increasing amounts for cooking, water heating, space heating and sterilizing. Restaurants, hotels, clubs and bakeries continue to install new streamlined gas equipment. Appliances for specialized cooking are coming to the fore, and the gas range is being supplemented with deep fat fryers, individual deck baking and roasting ovens, coffee makers, toasters, radiant ceramic broilers and many others.

Pipe Line Forecast

Although the industry thus far has been able to supply such quantities of gas as have been required, the time has come when the great network of pipe lines now in service must be supplemented by new construction if the needs of both civilian and defense production are to be satisfied.

Currently, three major companies are either constructing, or are definitely planning to construct, pipe lines to provide for the extension of natural gas service.

The first is that projected by the Hope Natural Gas Co. of West Virginia, a subsidiary of the Standard Oil Co. According to a news release of December 26, the immediate construction of a $30,700,000, 772-mile pipe line is planned. It would tap the large natural gas reserves of the Louisiana and Texas fields to serve the concentrated industrial areas in Ohio, Pennsylvania and West Virginia. Hope Natural has applied to the Office of Production Management for a preference rating, and it is thought that the line will be completed and in service within a year if materials are made available soon.

The second is that proposed by the Wisconsin Gas Transmission Co., an affiliate of the Independent Natural Gas Co., which is owned by Phillips Petroleum Co. This company has been granted permission by the Public Service Commission of Wisconsin to pipe natural gas into Wisconsin. Wisconsin Transmission expects to build an 887-mile pipe line from the Texas Panhandle through Oklahoma, Kansas, Missouri, Illinois and Iowa. The line would be completed in 18 months at an estimated cost of $28,698,000.

The third is that of the Panhandle Eastern Pipe Line Co. According to an announcement by President J. D. Creveling, the company plans to spend $6,800,000 in 1942 to expand the service facilities which now carry natural gas from the Texas Panhandle area to Michigan. At the present time the company has more than 250 miles of loop lines under construction in Kansas, Missouri, Illinois and Michigan, and proposes to lay 175 more miles of line in Illinois and Michigan during 1942.

A recapitulation of the information on pipe line construction regularly collected by the research staff of *GAS* reveals that 1941 maintained the building pace of the past two years. In all, approximately 8204 miles of line were either built, under construction or proposed last year. Of this total, 1175 miles had been completed, 1254 were building, and 5775 were proposed. Table No. 2 presents a brief summary of the data obtained from querying every major pipe line company in America.

TABLE NO. 2. SUMMARY OF DATA ON NATURAL GAS PIPE LINE CONSTRUCTION, 1941

(Based on information supplied by 43 companies to GAS research staff)

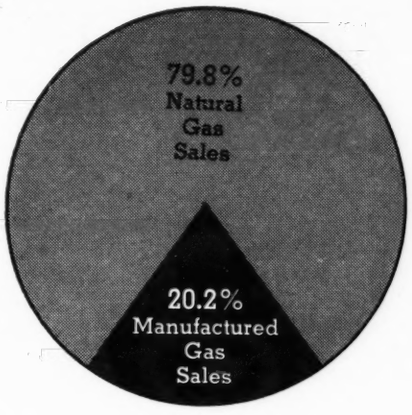
Total miles reported	8,204
Total miles reported completed	1,175
Total miles reported building*	1,254
Total miles reported proposed	5,775
Reported costs of 6469 miles	$179,378,829
Estimated costs** 1802 miles	$ 50,005,000
Total B.H.P. reported building and completed	49,285
Total B.H.P. reported proposed	117,000

* Some lines reported building have since been completed.
** Based on estimated average cost per mile of $27,750.

1941 High Points

A significant development of far-reaching influence on the future operations of the gas industry was the formal establishment last year of The Institute of Gas Technology. Classes are now under way at the Institute and Fellowships for the first year were awarded to four picked students who attended the initial meeting of their classes September 22. The men selected to receive $1000 fellowships and pursue programs leading to masters and doctors degrees were Gerald J. Lubin, B.S., Chemical Engineering, University of Detroit; Alexander K. Mikulski, B.S., Chemical Engineering, Fenn College; Robert Moody Newhall, B.S., Chemical Engineering, Tufts College; and Henry E. Robinson, B.S., Chemical Engineering and M.S. Physical Chemistry, Washington University.

The Illinois Institute of Technology was chosen as the site of the Gas Institute after an extensive survey had been made by a gas industry committee. Dr. Harold Vagtborg, director of the Armour Research Foundation, is director of the Gas Institute, and Dr. Lincoln R. Thiesmeyer, formerly of Lawrence College in Wisconsin is student advisor.



The Gas Institute was created in June with an appropriation of $1,000,000 by 17 leading gas companies in the United States. Buildings necessary to house the Institute will be built as a separate unit or the Armour College of Engineering campus of Illinois Tech and are expected to cost about $3,000,000.

The stated objects of the Gas Institute are:

1. To train men for the industry.
2. To conduct fundamental and applied research.
3. To collect and disseminate scientific information.
4. To encourage further research by others in the gas industry.

Among the major problems faced by natural gas companies has been the problem of meeting peak load requirements. The steady growth of the domestic house heating load in recent years has made the problem particularly pressing and this year saw two notable attempts to solve it through the building of standby plants brought to successful conclusions.

In Southern California where a mild climate and abundant supplies permitted the use of Liquefied Petroleum Gas, the Long Beach Municipal Gas Department, City of Long Beach, completed and placed in service an LP-Gas standby plant designed to deliver not less than 500,000 cu. ft. per hour equivalent to 1070 B.t.u. natural gas.

Work on this plant was started in August of 1940, the test runs were made in December of the same year, and the plant went into service in 1941. The LP-Gas for the plant is stored in 22, 7 ft. by 105 ft. tanks, and various equipment includes a vaporizer, steam generators, compressors and necessary valves and controls.

In Cleveland, Ohio, The East Ohio Gas Co. had also been at work on a solution to the standby problem. After several years research and planning, the company began building a natural gas liquefaction plant in 1940. Practically completed by January of 1941, the plant was placed in operation and on February 7 the first production of liquefied natural gas was started.

The first call for use of the standby plant came February 19 and was met. By March when the most severe cold wave of the winter hit Cleveland, the plant was ready to supply 16,000,000 cu. ft. on March 17 and 5,000,000 cu. ft. the following day.

By the end of the first year of operation, the management of The East Ohio Gas Company was able to say: "This plant has operated successfully, and has fully justified the money invested in it."

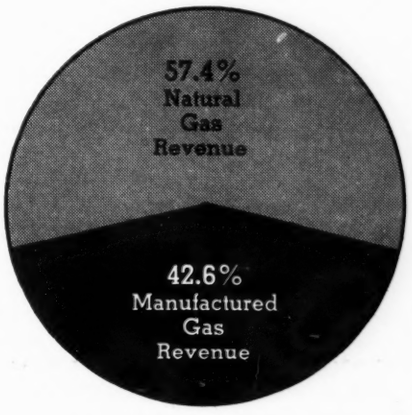
The year 1941 was marked by another outstanding achievement in the starting (to be in operation this month) of construction by the Portland Gas and Coke Co., Portland, Ore., of a new $1,500,000 chemical and gas manufacturing plant for the production of petroleum coke, "light" oils and tar, such as toluol, solvent naphthas and xylol, and briquets for use in homes and industrial plants.

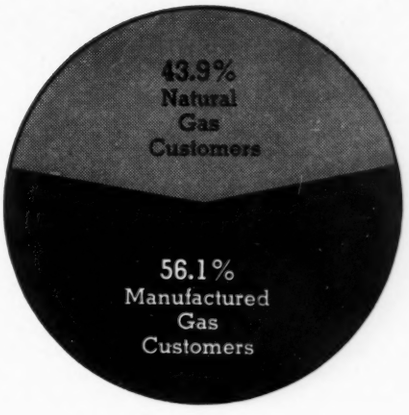
TABLE NO. 3. PRELIMINARY ESTIMATES ON THE GAS INDUSTRY FOR 1941

(Statistical Department, American Gas Association)

	1941	1940	% Change
Customers (Thousands of Consumers)			
Domestic *	17,534	16,922	+ 3.6
Commercial	992	978	+ 1.4
Industrial	92	91	+ 1.1
Total	18,618	17,991	+ 3.5
Gas Sales (MM. c.f.)			
Domestic *	682,109	686,782	— 0.7
Commercial	185,922	180,900	+ 2.8
Industrial	1,137,232	963,644	+18.0
Total	2,005,263	1,831,326	+ 9.5
Revenue (Thousands of Dollars)			
Domestic *	$ 583,398	$ 584,417	— 0.2
Commercial	106,723	104,491	+ 2.1
Industrial	219,320	182,832	+20.0
Total	$ 909,441	$ 871,740	+ 4.3

* Includes House Heating.





Public acceptance of tested and approved gas ranges, water heaters and other equipment has become so extensive, declares the A.G.A., that today more than 95% of all gas appliances sold in the United States and Canada display the approval seal of the American Gas Association's testing laboratories. More than 200 municipalities now have ordinances permitting only approved gas equipment to be installed within their limits.

Records of the Bureau of Census show that since the establishment of the laboratories 16 years ago, accidental deaths resulting from gas poisoning have decreased 50%. Moreover, during the same period, operating efficiency of household gas appliances increased from 25% to 50%.

Greatly increased demands for approved equipment for newly constructed army camps, defense housing and other projects were major influences in expanding test operations.

Strong acceptance of gas fuel and modern gas appliances continues in slum clearance projects and national defense housing. Out of 355 completed slum clearing projects, 311 use 111,211 gas ranges for cooking. More than 50,008 gas ranges are also installed in 163 of 193 completed defense housing projects. Eighty-seven thousand dwelling units of both classes of projects use gas for water heating and 67,000 units use gas for space-heating.

Some 700 operating gas companies continued for the sixth consecutive year to sponsor a national advertising program supplemented by local newspaper advertising. Advertisements on the modern gas range and on the four main household uses of gas fuel appeared in national consumer magazines. Sixteen magazines serving the trade and professional fields have carried advertising this past year.

REDUCTION OF IRON ORES IN NATURAL GAS

By W. G. CLARK

Los Angeles, California*

NATURE supplied the Pacific Coast States with high-grade iron ores, but was not liberal on coal of coking quality, and the reduction of these ores has awaited the development of a process using materials available in this locality.

The first iron used by man came from meteors which primitive man worked into arrowheads and spear points, with stone tools. Meteors have been found showing evidence of such work.

In the course of time men found that some rocks (iron ore) were, in the embers of a wood fire, converted into a workable metal. Invention converted the wood fire into a charcoal fire, requiring a blast of wind to keep it burning. Wind was not always available when wanted, so man-made wind was developed and the primitive blast furnace was born.

The incomplete combustion of carbon generated CO gas, an efficient reducing agent for converting iron oxide into iron, and the close contact between the fuel and the reduced ore effectively delivered the heat required to melt the iron as it was reduced.

Man then discovered coal and found that a coal, charcoal (coke), could be produced and used effectively in the blast furnace to produce iron.

As forests retreated before the woodsman's axe, coal became the cheaper fuel, both as the reducing agent for iron, and the source of heat for working it. This metallurgy of iron has remained with little change for 300 years.

In the extreme western states of this country, timber was too valuable to convert into charcoal, and with but a limited supply of coking coal in Washington and Utah, the iron industry has awaited the development of water power for electricity and the utilization of natural gas there available, as a reducing agent.

This development has now been accomplished.

Many attempts were made to utilize the vast stores of high grade iron ores found in this area. H. H. Noble attempted to use charcoal in Shasta County, Calif. John W. Gates attempted to use crude petroleum at Port Arthur, in Texas. J. S. Torrance, W. A. Harriman, D. H. Botchford, and many others attempted to overcome natural conditions and bring coal to the iron deposits for blast furnace reduction, but transportation costs on coal to an area where natural gas had eliminated the market for by-product gas, defeated their efforts and the net result to date, is one blast furnace in Utah, located near a coal mine and producing pig iron. This is operated by the Columbia Steel Co., a branch of the United States Steel Corp., and the iron is shipped to open hearth steel-making plants in Los Angeles and San Francisco.

In 1912, after conferring with Professor J. W. Richards, of Lehigh University, an authority on the reduction of iron, I started experiments on reduction with gas in a horizontal externally heated reducing chamber.

This furnace design was, on accumulated experience, gradually changed from horizontal to vertical, and the movement of ore under reduction was changed from mechanical to gravity.

Experiments under the observation of Dr. Richards and myself, demonstrated that Fe_3O_4 and carbon, dried and enclosed in refractory capsules, then subjected to melting temperatures, was not reduced, the iron oxide melted into globules distributed throughout the carbon with no reduction. If however, a small amount of water was allowed to remain in the mixture, reduction took place due to the formation of hydrogen and carbon monoxide gas.

After extended experiments on CO gas, or with producer gas (CO-H_2, hydrocarbons and nitrogen) I found that hydrogen, derived from natural gas undiluted by nitrogen, was the best reducing agent, and a generous supply of the source of this hydrogen was available from the oil fields in California and Texas.

I also found that the carbon, separated from the hydrogen in breaking the gas, could be accumulated and recovered as a valuable by-product.

In 1917, for the better control of heat, I installed a high frequency electric induction coil to heat the reduction chamber. This permitted close regulation and heat control.

With this controlled temperature I found that a mixture of oxides Fe_3O_4, Fe_2O_3, and Fe_0, formed a combination which melted at temperatures below the melting point of the separate oxides and was the reason for sticking.

The use of gas as a reducing agent, and close regulation of temperature, during the first stages of reduction controlled this problem and complete reduction to metal was accomplished below 1800° F., with no sticking.

Experiments were then directed to the temperatures and conditions under which CH_4 and C_2H_6 could be economically broken to carbon and hydrogen. I found that freshly reduced iron, under proper conditions of temperature and pressure, acted as a catalytic agent and assisted in breaking CH_4 and associated hydrocarbons, to hydrogen and carbon, the carbon depositing on the reduced iron at temperatures below the combining point with iron.

When the temperature of this reduced iron was raised to about 1950° F., and the gas pressure maintained above one atmosphere, this gas began to break below 950° F., and at 1950° F. the unbroken hydrocarbons were reduced to a fraction of a percent. This method yielded free hydrogen for the reducing agent.

Early laboratory work was conducted in New York and Brooklyn with CH_4 delivered in steel tanks.

This work was done in New York and Brooklyn under the supervision of Dr. Richards and myself. Later General George W. Goethals joined me in supervising this work.

In 1927 experimental work was transferred to Los Angeles, and the gas used for further work was obtained from Southern California gas mains. This gas was 80% to 86% methane, the remainder being ethane and small amounts of higher hydrocarbons, with a little nitrogen and a fraction of a percent of CO and CO_2. The gas weighed from 49 to 51 lbs. per M.c.f. at standard conditions.

In 1936 I constructed a pilot plant at Glendale, Calif. (Fig. 1). In this plant tests were run on natural gas, with check tests, using hydrogen obtained in steel tanks.

This work at Glendale was conducted under my supervision, with the assistance of Dr. Robert White, a graduate of California Institute of Technology, and R. P. Drummond, president of the Hanford Foundry Co., of San Bernardino, Calif.

During the operation of this plant tests were run on ores from California, Washington, Utah, Minnesota, Alabama, and Texas, and the time required for the complete reduction of the va-

* An article which supplements the one published herewith is titled "Reducing Iron Ore With Hydrogen," by M. H. Kalina, instructor in Metallurgy, and T. L. Joseph, professor of Metallurgy, University of Minnesota, *The Iron Age*, Dec. 11, 1941, pp. 39-43.

rious ores under this process was here determined.

Tests were also run on mill scale and hammer scale.

The composition of ores tested, ranged from California ores, carrying hematite, magnetite, and limonite, with a 65% iron content in a lime gangue, to Utah and Texas ores, varying from a soft red hematite, carrying iron in a lime soda gangue, to Utah hard specular hematite in quartz gangue.

All iron oxide ores were successfully reduced.

Tests were also run on chromite concentrates obtained from San Luis Obispo County, Calif. This chromite, when briquetted with a carbon free binder, was successfully reduced with 30% of iron and but a trace of carbon. It required, however, the addition of a small amount of alkali metal vapor to start the action.

The Glendale pilot plant was destroyed by fire before the experimental work was completed. A second plant was then constructed on South Normandie avenue, in Los Angeles. This plant, now standing, is equipped with a 100-kw., 1000-cycle generator, and draws its gas supply from a high pressure main of the Southern California Gas Co., at approximately 50 lbs. per sq. in.

At this location I conducted operations under the supervision of Dr. A. Grendon, formerly instructor of Physics at Columbia University, New York, and A. L. Smith, a mechanical engineer of Long Beach.

All of the essential factors of design for a plant of commercial size were here determined. (See Fig. 2).

For a commercial plant the ore, crushed and screened at the mine, would be delivered to the reduction plant in hopper bottom cars. The ore would then be picked up by a belt conveyor and delivered into a rotating roaster above ground level.

This roaster, burning gas, raises the temperature of the ore to, or above 1500° F., eliminating all water of crystallization.

From the roaster the ore is delivered by elevator to the top of the reduction stack, approximately 115 ft. above ground level, into the top of the reduction stacks at a temperature at, or near, 1500° F., through standard blast furnace, gravity traps (to reduce loss of gas), the ore moves down through the reduction stack by gravity, counter to gas moving upward by (gravity) buoyancy.

The ore (without any additions of fluxing material), passes down through a restricted area in the reduction zone. The excess hydrogen and the water vapor generated in the reduction process is separated from the ore at the top of the stack and passed to a waste heat boiler and condenser for eliminating water. From there the dry gas is returned to the gas circuit of the first reduction stack or to a second reduction stack for carbon free reduction in pure hydrogen.

The reduction stacks consist of outer and inner tubes. The outer tube of iron, chromium and nickel, to withstand the required temperature without scaling. The inner tube, not in contact with air, is of carbon steel.

The annular space between the inner and outer tubes receives the ore which moves down against upwardly moving reducing gas, CH_4 and H_2 and water vapor.

The restricted annular passage assists in heat exchange between ore and gas and maintains the desired gas pressure in the reduction stack.

The reduction stack is surrounded by heat insulation to reduce radiation, and outside of this heat insulation four sections of the reduction stack are surrounded by copper tube induction coils, carrying alternating current of approximately 1000 cycle per second frequency. Water under pressure flows through the copper tube coils to limit resistance loss.

The diameter of the reduction stack determines its tonnage capacity.

Below the first 25 ft., the external diameter of the stack is increased and the diameter of the inside tube is decreased at intervals of 12 ft.

This change in diameter assists the downward movement of the ore and provides space for the increase in volume of gas due to increasing temperature, and in breaking CH_4 gas (one volume of CH_4 yielding two volumes of hydrogen at standard conditions).

The action of the induction coils is entirely magnetic. Both the outer and the inner tubes act as closed or short-circuited secondaries generating heat.

The oxide ores as delivered into the reduction stack are poor conductors of heat and of high electrical resistance. Therefore the heat received by the ore in the upper section of the stack is by radiation and conduction from the hot inner and outer tubes, and by heat exchange from the hot gases and water vapor delivering temperatures to the ore particles.

Each induction coil raises the temperature of the descending ore approximately 100° F.

The reducing action starts in the field of the first, or upper, induction coil and by the time the ore reaches the middle of the second coil the temperature at which the ore tends to stick or agglomerate has been passed and each particle of ore has accumulated a metallic surface.

From this point downward each particle in the magnetic field becomes an independent secondary and is heated as a secondary conductor, independent of the inner and outer walls of the reduction stack.

The entire chemical action in the stack is endothermic.

The hydrogen gas, derived from natural gas, is the only reducing agent used. The carbon does not enter into the reducing action at the temperature generated.

The hydrogen unites with the oxygen in the oxide ores and passes upward with the required excess of hydrogen, delivering heat to the descending ore and passes out near the top of the stack, and the required excess hydrogen is recovered for re-use.

I have found, by experience, that the required excess of hydrogen is between 30% and 35%. To be safe I have specified 37%.

The reduction is complete on Southern California hematite and magnetite ores, 1/8 to 1/2 in. size, within 3½ hours at 1800° F.

These ores carry a lime gangue which swells on calcining and maintains the porosity of the ore.

With some ores, such as "specular" hematite and "dense" magnetite and mill scale, the time required for reduction is greater and the required temperature a little higher, therefore, to allow a safe margin, the time required for 100% reduction is specified as 4½

W. G. CLARK

MR. CLARK, through many years of research, has developed a process for reducing iron ores to almost pure metal through the use of natural gas as a chemical agent in a vertical externally heated reducing chamber. While Mr. Clark's process has not yet been used for the commercial production of iron, it is conceivable that it will be most useful in developing those sections of the country in which there are vast stores of iron ore close to a natural gas supply, but remote from good coke-producing coal. Mr. Clark is a Fellow of the American Institute of Electrical Engineers, and a member of both the American Institute of Mining and Metallurgical Engineers and the American Institute for the Advancement of Science.—Editor.

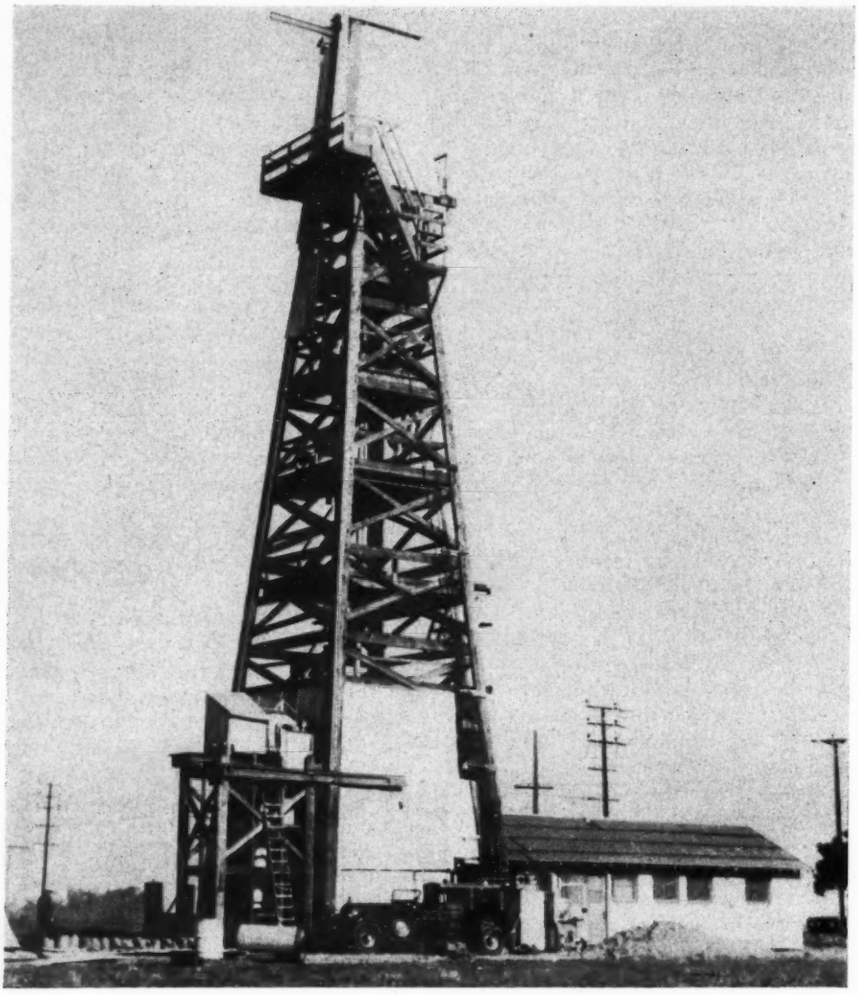


FIG. 1. Clarkiron Process Glendale, Calif., pilot plant.

hours, and the maximum temperature for complete reduction is 1850° F.

All ores tested, except those carrying commercial percentages of manganese, have been completely reduced within this time and temperature limit. The manganese content of the ores is reduced to metal under this process, but more time is required. Hematite ores, with a lime gangue, and carrying up to 5% manganese, requires approximately 30 minutes more time. A higher percentage of manganese in magnetite, with a silica gangue, requires one hour increased time.

Chromium concentrates, in porous carbon free briquettes, carrying 30% to 50% iron, were reduced in approximately the time required for manganese, but require a small proportion of an alkali metal vapor added to the hydrogen to start the reducing action.

In this process the reducing gas enters the reduction stack under pressure, in contact with the discharging reduced iron. Expansion of the gas reduces the temperature of the discharging iron low enough to permit it to be discharged through a water seal directly to chain belt elevators operating in the water column which lifts the iron to the top of the balancing water column, where it is discharged directly into a rotating washer, then to a dryer and to storage, or melting equipment.

To avoid the possibility of water entering a hot section of the reduction stack a water tank is provided below the level of the iron discharge from the stack. This tank is connected to the reduction stack and as the gas pressure rises in the reduction stack it forces the water up in the balancing water column. On reduction of gas pressure, this water returns from the water column into this tank without entering the reduction stack.

The reduced iron, as delivered from the reduction stack, carries the gangue contained in the original ore. This gangue is eliminated as slag when the iron is melted, or if ground, the powder is passed through a magnetic separator and the gangue and carbon is there eliminated to, or below, the one-half of one percent specified by the fabricators of powdered iron.

Due to the low carbon content of this iron, the melting point is 2790° F., and if melted in the ordinary open hearth furnace, the iron requires briquetting and subjects the refractory lining to a temperature above 3000° F.

To avoid this condition I have developed an induction melting furnace in which the iron is melted in a refractory tube as fed in. This furnace does not require electrodes, so does not increase the carbon content of the iron, and the refractory lining in contact with melting temperatures is limited to one easily replaceable tube.

This melting equipment, or a number of them, can be located above the roof of an open hearth furnace, or the furnace can be provided with an accumulating chamber of the desired capacity, into which the melted iron and gangue (slag) can accumulate.

The accumulating chamber is surrounded by an independent induction coil to provide the heat lost by radiation, and through the action of the induced current, the molten metal is kept in slow motion while in this chamber.

Slag can be drawn off through a separate slag spout and the iron (or steel) can be cast directly into ingot or in molds as desired for fabrication.

Under this process the carbon derived from the gas is deposited on the reduced iron at low temperature and accumulates as a salable by-product. A portion is carried up by the hydrogen and water vapor through the incoming ore and out of the top of the reduction stack. This fraction is recovered in a multiclone collector before the water vapor is condensed.

A part of the carbon is washed from the reduced ore, passed through a settling tank and collected in a filter press.

The carbon collected, varies in weight from a soft lamp black, weighing but 6 lbs. per cu. ft., to hard gas carbon, weighing 108, or more lbs. per cu. ft. The hard carbon fraction collected in the settling tank, with some gangue and iron particles is salable as a color for concrete. Other grades are used as filter material, and in the rubber and chemical industry, and in the manufacture of paints and enamels. The price range is from 1¢ or 2¢ per lb. for the coarse fractions, to 10¢ or more per lb. for the light fractions.

The excess hydrogen discharge from the reduction stack may be combined with the entering hydrocarbon gas and returned to the original reduction stack, or, it may be accumulated to provide practically pure hydrogen as the reducing agent in a second reduction stack, in which ore can be reduced

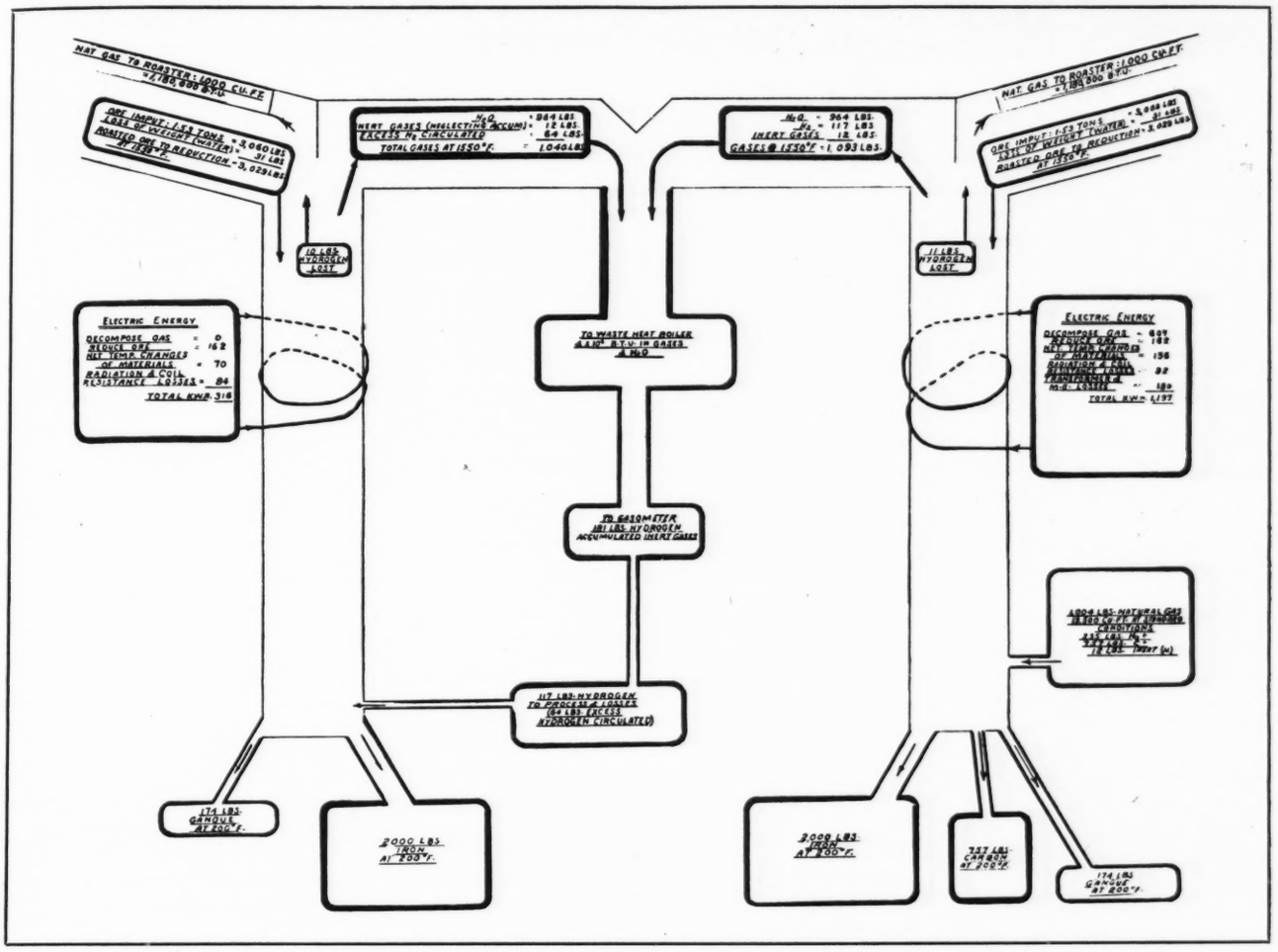

NAT. GAS TO ROASTER: 1000 CU. FT.
= 1,196,000 B.T.U.
ORE IMPUT: 1.63 TONS
LOSS OF WEIGHT (WATER) = 31 LBS.
ROASTED ORE TO REDUCTION = 3,029 LBS.
AT 1550°F.
10 LBS. HYDROGEN LOST
INERT GASES (NEGLECTING ACCUM.) = 12 LBS.
EXCESS H2 CIRCULATED = 64 LBS.
TOTAL GASES AT 1550°F = 1040 LBS.
ELECTRIC ENERGY
DECOMPOSE GAS = 0
REDUCE ORE = 152
HEAT TEMP. CHANGES OF MATERIALS = 70
RADIATION & COIL RESISTANCE LOSSES = 84
TOTAL K.W.H. 316
TO WASTE HEAT BOILER
4,870,000 B.T.U. IN GASES
@ 1550°
TO GASOMETER
117 LBS. HYDROGEN
ACCUMULATED INERT GASES
117 LBS. HYDROGEN TO PROCESS + 1,093 LBS (64 LBS EXCESS HYDROGEN CIRCULATED)
174 LBS. GANGUE AT 200°F.
2000 LBS. IRON AT 200°F.
H2O = 964 LBS.
H2 = 117 LBS.
INERT GASES 12 LBS.
GASES @ 1550°F = 1,093 LBS.
11 LBS. HYDROGEN LOST
NAT. GAS TO ROASTER: 1000 CU. FT.
= 1,196,000 B.T.U.
ELECTRIC ENERGY
DECOMPOSE GAS = 697
REDUCE ORE = 182
HEAT TEMP. CHANGES OF MATERIALS = 156
RADIATION & COIL = 92
TOTAL K.W.H. 1,197
2000 LBS. IRON AT 200°F.
727 LBS. CARBON AT 200°F.
174 LBS. GANGUE AT 200°F.

FIG. 2. Material and energy flow diagram for Clarkiron Process of reduction of iron in gas. (Chemical reactions and calculations checked by Dr. Oscar Veinreb, University of Budapest.)

to iron carrying as low as 2/1000 of 1% of carbon. This small fraction of carbon is due to some unbroken hydrocarbons in the hydrogen.

In this process the gas is not burned but acts only as a reducing agent. Heat in the reduction stack is generated electrically and is recorded and controlled by thermostats.

Without giving consideration to the unimportant inert fractions the gas amounts to: CH_4 and C_2H_6 plus heat equals C plus H_2.

The reduction is Fe_3O_4 and Fe_2O_3 plus H_2 plus heat equals Fe plus H_2O plus excess H_2 with the small percentages of nitrogen and CO_2 inerts.

The breaking action of the gas and the reducing action from oxide to metal are both endothermic.

The heat required for breaking the gas and reduction of the ores (Fe_3O_4 and Fe_2O_3) is 300 watt hours (1025 B.t.u.'s) per lb. of reduced metal delivered, or 600 kw. hours per short ton of reduced metal. This is the total, including resistance and heat losses, without any credit for heat recovered from the waste heat boiler.

The gas requirement of standard natural gas as delivered from local gas mains, carrying 86% CH_4 and 12.6% C_2H_6, and weighing from 49 to 51 lbs. per M.c.f. (standard condition) is 5 cu. ft. (minimum) per lb. of reduced iron delivered, to 6 cu. ft. (maximum) per lb. of reduced iron delivered, or 10,000 to 12,000 cu. ft. per short ton of reduced iron. These figures include roasting, so when the ore is wet, or carries more than the average amount of limonite, a greater amount of water must be evaporated and the higher figure applies.

The man hours required per ton of reduced iron, delivered, under this process is approximately one-fifth of the man hours required for the delivery of an equal quantity of pig iron under the blast furnace method.

The iron delivered under this process is free of excess carbon, silica and sulphur, with a substantial reduction in the amount of phosphorous contained in the original ore, and does not require open hearth or Bessemer method of purification.

Estimates obtained to date indicate that the investment per ton of output will be substantially less than the investment required per ton of output of pig iron, and the time and labor required for construction will be less.

Under this process a plant can be economically constructed and operated on a capacity of 100 tons or less daily.

For a plant of 500 tons daily capacity the present recommendation would be for four 125-ton units, eventually the recommendation will probably be two 250-ton units.

Under this process, at the present wage scale and at present quoted rates on electric power and gas in Southern California, local ores can be reduced at Los Angeles and delivered as high-grade low-carbon iron, ready for melting, at a cost below the cost of producing common pig iron, in Utah or Alabama; and with the required carbon added, can be melted electrically and delivered as steel ingot ready for rolling at a cost probably well below the present cost of steel produced under any other method.

OPC OK's Calif. Conservation Program

THE California conservation plan, designed to assure the production, at maximum operating efficiency and without waste of critical materials, of a continuing supply of petroleum for the war in the Pacific was approved December 11 by the Office of Production Management and was scheduled to go into effect January 1, 1942.

Responsibility for initiating conservation measures was placed by Petroleum Coordinator for National Defense Harold L. Ickes on the Industry Production Committee for District 5, which formulated the program at the request of the Coordinator. The Committee was charged with obtaining the cooperation of the California producers and others engaged in the oil business in the various measures to be invoked.

The Committee is to determine allocation schedules for oil production in California, and is to formulate other necessary conservation measures. It is specified that persons engaged in the oil industry produce, store, sell, market, transport, purchase and handle petroleum and its products only if produced in accordance with conditions proposed by the Committee and approved by the Coordinator.

The two-fold purpose of the plan is: (1) To accomplish the conservation of petroleum and natural gas and of critical defense materials used in their discovery, development and production, and (2) To enable the petroleum industry to meet fully all war, national defense and essential civilian demands.

These objectives can be achieved, the Coordinator said, by continuing the discovery of new reserves, by conducting development and production operations in an orderly, efficient manner and by maintaining production "at, but not greater than, a rate sufficient to provide adequate stocks and to fill current needs." Wasteful production of oil or gas is expressly banned under the terms of the plan. The one exception is where the Petroleum Coodinator finds and certifies that there is urgent direct defense demand for additional production from any particular California field.

Specifically, Coordinator Ickes charged the Production Committee for District 5 with the task of preparing "a plan or plans" that will:

1. Assure the proper development, production, and utilization of the reserves of petroleum and gas in District 5.

2. Make petroleum and petroleum products available at the proper places to meet military and civilian needs.

3. Accomplish the most effective use of critical materials.

4. Assure the efficient use of transportation, storage and refining facilities.

5. Eliminate the drilling of unnecessary wells.

6. Prevent physical waste above and under ground.

7. Assure that natural gas produced in conjunction with petroleum is used primarily for the efficient recovery of petroleum.

■ ■

Recently Formed Company Gets Loan of $10,000,000

The newly-formed Public Service Co. of Indiana, Inc., Indianapolis, Ind., has consumated an agreement with six banks and two insurance companies for a loan of $10,000,000 represented by unsecured notes with an average interest rate, over the life of the loan, of 2.6356%.

The proceeds from the loan were applied to the redemption of $8,800,000 of Public Service Co. of Indiana 3⅞% serial debentures maturing semi-annually to Sept. 1, 1949; $400,000 Northern Indiana Power Co. 3% serial notes maturing annually to Feb. 27, 1945; and $396,923 Central Indiana Power Co. 2.73% collateral notes maturing semi-annually to 1959.

Public Service Co. of Indiana, Inc., was organized last September by consolidation of the Public Service Co. of Indiana, Central Indiana Power Co., Northern Indiana Power Co., Terre Haute Electric Co., Inc., and Dresser Power Corp. (See *GAS*, October, 1941, p. 69.)

■ ■

A. G. A. Issues Supplement To Gas Appliance Directory

The American Gas Association Testing Laboratories has issued the December 1, 1941, Supplement to the October 1, 1941, issue of the Directory of Approved Gas Appliances and Listed Accessories. The appliances listed in the 32-page supplement published by the Laboratories, 1032 East 62nd Street, Cleveland, Ohio, and 1425 Grande Vista Ave., Los Angeles, Calif., are those which were approved, listed or added to the Directory of Approved Gas Appliances and Listed Accessories during the month of November, 1941, and are to be used in conjunction with the October 1st issue of the Directory.

■ ■

Colorado Company Offers Rate Cut to Consumers

The Colorado Interstate Gas Co., Colorado Springs, Colo., has offered the city of Denver a $350,000 yearly cut in householders' natural gas bills. It also offered cuts totaling approximately $450,000 to several cities east of the Rockies between the Panhandle gas field and Cheyenne, Wyo., which are supplied gas by the Canadian River, Colorado Interstate, and Colorado-Wyoming gas pipeline companies, under affiliated ownership.

C. Lloyd Cain To Represent GAS Magazine in New York

Recently ending an association of 18 years with the *Oil and Gas Journal*, in which he variously served as Eastern representative and advertising manager for the home office, C. Lloyd Cain has joined the staff of *GAS* magazine and opened offices in New York at 110 East 42nd Street.

C. LLOYD CAIN

During his long connection with the *Oil and Gas Journal*, Mr. Cain handled all sales in the Eastern territory for the *Journal*.

His entry into the publication field followed immediately upon his graduation from Colgate University with the degree of B.S. First with the Frank A. Munsey Co., and later with McGraw-Hill Publishing Co., he learned the fundamentals of magazine publishing as a member of the staff of *Chemical and Metallurgical Engineering*.

Mr. Cain's intimate knowledge of the oil and gas industries, together with his wide acquaintanceship with the industry leaders throughout the East, particularly fit him for his present work on *GAS* magazine.

■ ■

Carbon Black Permit Issued For Hugoton Field Project

The Kansas Corporation Commission has issued a permit to utilize natural gas from the Hugoton field in western Kansas for the manufacture of carbon black to Glenn M. Dunne, Wichita, Kan., vice president of the Dunne-Israel Co., and C. W. Hoffman, Eastland, Texas, official of the Huber Carbon Black Co.

It was announced at the time that a $300,000 carbon black plant will be built near the town of Hugoton and a drilling and development program will be undertaken soon in townships near Hugoton.

Construction of the plant will provide a market for gas from an area where large numbers of land and lease owners have been unable to find a connection for their output. It is also expected to relieve the problem of drainage of gas from adjoining leases which has caused some difficulty in the past.

■ ■

Gas Division of Firm Moves From Iowa to South Dakota

The Sioux Falls Gas division of the Central Electric and Telephone Co. has moved to the firm's new building at 116 So. Main avenue, Sioux Falls, S. D., E. Clark Deane, manager, announced.

General offices of the company, moved from Sioux City, Iowa, to Sioux Falls, were recently opened with R. A. Phillips, vice president and general manager, in charge. The move meant the transfer of 86 employees from Sioux City to Sioux Falls. The new building is an 88 by 150 ft. structure.

■ ■

Ohio Company Sells Assets

American Gas Service Co. of Ohio, formerly a subsidiary of Blaw-Knox Co., Pittsburgh, Pa., has sold its assets and operating properties to the Protane Corp., Erie, Pa.

Gas Engine-Generator Sets for Standby Service

WITH "power" shortages already being experienced this winter, many manufacturers who have been worrying about "material" shortages are beginning to develop still more wrinkles and gray hair. Some of the more far-sighted, however, have prepared for the future by installing engine-generator sets for standby service, operated by gas or gasoline, or equipped with dual carburetors to handle either type of fuel in the event the other is not available at the moment. This situation sets up an opportunity for the gas industry which is almost made to order.

In the past, and even today, gas company engineers have been somewhat reluctant to tackle the application of engine-generator sets to manufacturing plants, particularly machine shops. This is true because the sum of the ratings of all the motors makes a total maximum theoretical load which requires excessive horsepower which, in turn, means high plant cost and poor gas economy. All in all, when approached from this angle, the picture looks pretty discouraging to the gas man, and the manufacturer, too!

The fact is that the peak load in most machine shops at any given moment is substantially less than the total rating of all the motors in the plant. This means, therefore, that it is never necessary to install an engine-generator set with a capacity equal to the rated peak load. Actually, it is the peak sustained load that has to be carried.

The problem, then, is to arrive at the actual peak sustained load and figure the required engine horsepower on that basis plus a generator of a comparably larger capacity to handle momentary above-average peak loads without excessive voltage fluctuations. A smaller engine means lower cost to purchase and to operate and makes it possible to produce the required power at a cost much lower than that charged by the electric utility. Quite a different picture, when approached from this angle!

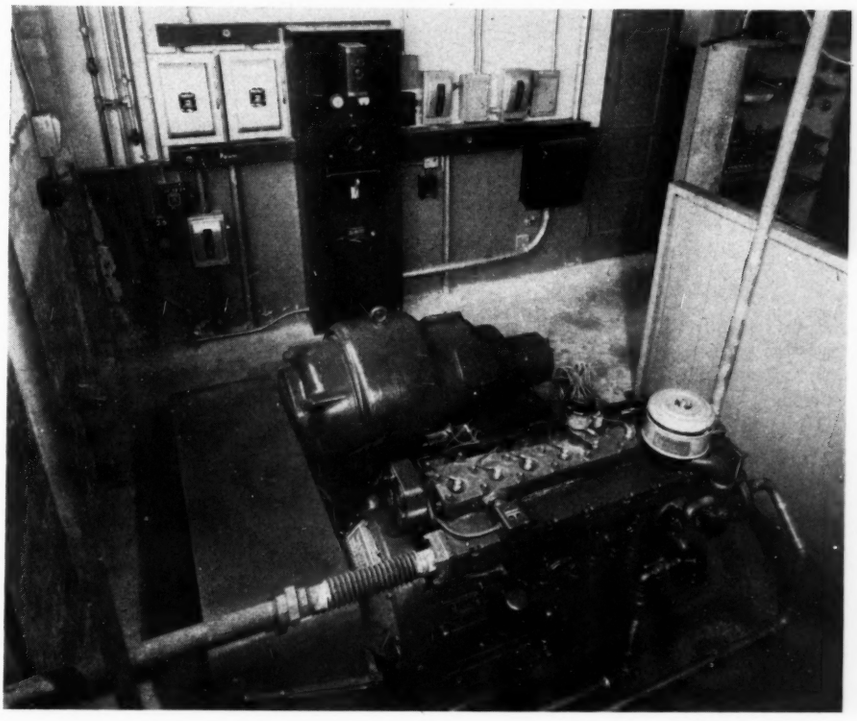
The gas utility engineer and the engine manufacturer have been increasingly successful in promoting the use of engine-generator sets for lighting markets, stores, office buildings, etc. In such cases, the problem is relatively simple. The total maximum load is easily computed and the length of time this load must be carried is also a matter of record. The answer is easy! But, it can be just as easy in the matter of the machine shop or manufacturing plant if the actual load is first analyzed with a recording watt-meter. This is demonstrated by the experience of the Domestic Manufacturing Co., Inc., Los Angeles.

While electric power rates in Los Angeles are extremely low, it was rather natural, albeit a somewhat unusual example of reciprocity, that a concern manufacturing equipment for the gas industry should express a preference for gas as a source of power in a tangible manner by installing its own engine-generator set. But, this was not a philanthropic gesture on the part of Domestic; they actually saved on power cost!

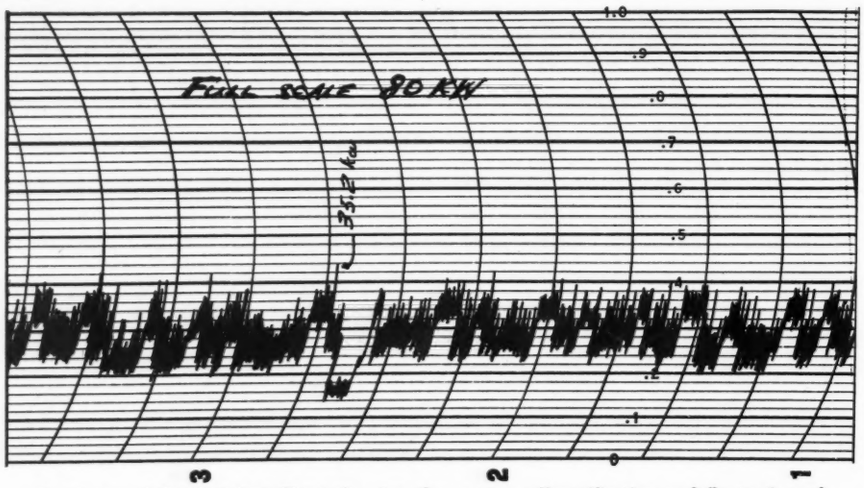
The Frazier-Wright power plant at Domestic consists of a 50-h.p. 8-cylinder continuous duty engine, using natural gas as fuel, and a 50-kw., 3-phase, 4-wire, 120-208-volt Master generator. On the face of it, this would appear as though the generator was too big for the engine, or the engine too small for the generator. And therein lies the secret of the whole job!

While, on the basis of motor ratings, the load in this shop would total over 100 h.p., it is so highly diversified that it can be handled by the combination of a 50-h.p. engine and a 50-kw. generator with a variation in voltage of within 2%. But, one may ask quite logically, how is enough power generated to handle peak loads, even granting that the 50-h.p. engine is big enough to handle average loads? While it might seem impossible theoretically, the answer is simple in terms of actual operation. The inertia of belts, pulleys, and other moving parts is sufficient to start the largest motors (10 h.p.) and handle instantaneous peaks caused by reversals.

The load problem in this shop, as shown by the accompanying chart, would be a tough one for standard generating units because of its extreme fluctuation and diversification. If approached entirely from the angle of connected horsepower, the engine-generator installation would have proved to have been excessive in installation and operating costs and could not have competed with low electric utility rates. The answer was arrived at by making an analysis of actual power consumption, regardless of individual machine ratings, and taking advantage of the tremendous diversification of load. In actual manufacturing operations, there is never a time when all machines are



This engine-generator set supplies power for machines and lighting in the Los Angeles plant of the Domestic Manufacturing Co., Inc. This combination of a 50-h. p. 8-cylinder engine and 50 KW. generator carries a widely diversified load with a voltage variation within 2%.



A section of the Esterline Chart showing the extreme diversification and fluctuation of load in the plant of the Domestic Manufacturing Co., Inc. An analysis of this kind shows actual peak loads do not exceed 35.2 KW, although the sum of the motor ratings in this shop totals over 100 h. p. This same situation is true in many shops because all the machines do not operate all the time at full rated capacity.

Small drill presses, such as appear in the foreground, account for a very small portion of the KW. input, much less than called for by the total rated capacity of all the motors used on these machines.

operating at the same time with each machine loaded to capacity.

An analysis of the load by the Esterline Chart (above) shows that four automatic screw machines, constituting a rated load of 35 h.p., actually operate on 12 kw. Three milling machines, consisting of a rating of 10 h.p. in reversing motors, averages 10 kw. The remaining horsepower consists of milling machines, punch presses, lathes, etc., and shows a very small average kw. input.

The Domestic plant operates on defense orders 24 hours a day, 6 days per week. This gives some idea of the continuous service required of this single engine-generator unit. Since the unit can only be serviced on Sundays, all service is on a "preventive" basis, the same as airplane engines in passenger transports are serviced between runs. With the unit operating an average of 700 hours per month, average gas consumption is 150,000 to 175,000 cu. ft. per month.

Manufacturing plants of this type can meet future requirements by the addition of similar units to operate in parallel, with sufficient capacity to carry actual operating peak loads regardless of rated horsepower. The entire unit is mounted on a cork-insulated bed plate; no foundation is used.

With an efficient engine-generator set producing power at a cost much less than electric power rates, one might jump to the conclusion that nothing more in the way of service could be expected. But, its advantages do not end there!

The cooling system for the unit consists of a radiator, mounted in the wall, and a propellor-type fan, driven by a reversible 1½ h.p. motor. This system serves four purposes.

1. To cool the engine jacket water.
2. To exhaust air from the factory in summer at the rate of 8000 c. f. m.
3. By reversing rotation, to heat air drawn into the plant in winter.
4. By passing jacket water through a heat exchanger before passing to the radiator, hot water for showers and wash room is provided at no extra cost.

Experience in this installation and others of a similar nature proves that, while it is theoretically incorrect insofar as relative engine power and generator capacity are concerned, on a practical basis it offers a valuable solution to the problem of developing low-cost power, whether for standby purposes in the event of emergency or for continuous operation, in manufacturing plants and machine shops. It is a practical answer to an important phase of our whole National Defense Program—how to maintain production at full speed in the face of a possible shortage of central station power. And anyone who has investigated this possibility at first hand knows just how serious it can quickly become.

■ ■

Lone Star Gas Co. Begins 12-in. Line to Sewell Field

The Lone Star Gas Co., Dallas, Texas, has begun construction of a 27-mile 12-in. pipe line into the Sewell field of Young county, Texas, and plans for the laying of a 6-in. line into the Pottsville gas area of Hamilton county, Texas.

The line to Sewell will extend north from the firm's compressor station at Brad in Palo Pinto county, and will have a capacity of 25,000,000 cu. ft. daily. Along its course, the line will cross under the Brazos River at a point immediately below Possum Kingdom Dam. Pipe being used was salvaged from a former line extending from San Angelo to the Big Lake field in Texas.

When the Sewell line is completed crews will start work on the Pottsville line, which will extend 15 miles to a point north of Hamilton to tie in with the company's system.

■ ■

Line to Serve Airport Completed in Oklahoma

The Southwestern Light and Power Co., Tulsa, Okla., has completed construction of 2¾ miles of 4-in. natural gas transmission line extending from its intermediate-pressure line encircling Chickasha, to the Wilson and Bonfils airport, near Chickasha. Cost of the line was $13,899.

The line is operating at a capacity of 2000 M c.f. per day at 25 lbs. operating pressure. It is protected by two coats of paint and one section runs under the Washita river, according to M. Douglas Parks, division manager, Southwestern Light and Power Co., Chickasha. The gas supply is used for heating and cooking purposes in the barracks and administration buildings.

Gas Transport, Inc., to Use West Virginia-Ohio Gas Line

THE Federal Power Commission has authorized the issuance of a certificate of public convenience and necessity to Gas Transport, Inc., a wholly-owned subsidiary of the Anchor Hocking Glass Corp., for the acquisition and operation of a 14- to 18-in. natural gas pipe line now being constructed by Anchor Hocking and extending 38 miles from near New Era, W. Va., to the vicinity of Gravel Bank, Ohio. The line will be used to transport natural gas to meet requirements in Anchor Hocking's two glassware plants in Lancaster, Ohio, and will also be used to transport gas for the Ohio Fuel Gas Co., Columbus, Ohio, to be sold by Ohio Fuel for resale in Cincinnati, Columbus, Dayton, Toledo and other Ohio communities.

Gas to be transported over the new line will be purchased by Anchor Hocking and Ohio Fuel Gas Co. from leased acreage of the Columbian Carbon Co. in Jackson county, W. Va. Delivery of the gas from the terminus of Gas Transport's line at Gravel Bank to Anchor Hocking's glassware plants at Lancaster will be made by Ohio Fuel Gas Co.

The action will enable Anchor Hocking to secure natural gas for its manufacturing purposes at a considerable saving over its present purchases from Ohio Fuel Gas Co. and action will enable Ohio Fuel and its associate Northwestern Ohio Natural Gas Co., of Columbus, in the Columbia Gas & Electric System to effect savings approximately in excess of $400,000 during the next calendar year over their present purchase arrangements with Hope Natural Gas Co., Clarksburg, W. Va. Ohio Fuel serves Cincinnati, Columbus and Dayton, among some 350 communities.

■ ■

Oklahoma Natural Enlarges Line to Serve Oklahoma City

Defense projects and growth in population have necessitated the construction of 7½ miles of 16 in. steel-welded pipe line by the Oklahoma Natural Gas Co., Tulsa, Okla., in order to bring 7,000,000 more cubic feet of natural gas to Oklahoma City.

The new line replaces a 12-in. line extending between a connection with the South Canadian river crossings and the belt line south of Oklahoma City and connects with another 16-in. line of the company carrying gas from the Cement, Okla., field.

Defense projects to be served by the new supply will include the Will Rogers Field, south of the city, which is now in full operation and the Midwest Air Depot, east of the city, now under construction. A 4¾-mile natural gas line of 8-in. steel-welded pipe has also been constructed recently from the southeastern part of the city to the Midwest Air Depot. This line has a capacity of approximately 250,000 cu. ft. of gas per hour.

■ ■

Pacific Gas and Electric Co. Plans Lines to New Fields

The Pacific Gas and Electric Co., San Francisco, Calif., has applied to the Railroad Commission for permission to build transmission lines from three gas fields which had not been operated before. These are the Fresno, Helm and Chowchilla fields. The Chowchilla field was discovered in 1934 but never developed. The other two were discovered this year. A pipe line and transmission lines from the Raisin City field, south of Fresno, would cost $225,000. The cost of the two other fields was not estimated.

Natural Gas Planned For Wisconsin

PUBLIC SERVICE COMMISSION OF WISCONSIN, in December voted to grant to Wisconsin Gas Transmission Co. the right to serve Wisconsin cities with natural gas piped from Texas and Oklahoma fields.

The company, an affiliate of the Independent Natural Gas Co., owned by the Phillips Petroleum Co. of Bartlesville, Okla., proposed to build an 877-mile pipe line from the Panhandle field through Oklahoma, Kansas, Missouri, Iowa, and Illinois to serve southern Wisconsin distribution systems. Company engineers estimated the cost of the pipe line at more than $28,000,000. Points to be served in Wisconsin included Milwaukee, Madison, Racine, Beloit, Sheboygan, Fond du Lac and other cities.

Wisconsin Gas Transmission Co. won its franchise right over two competitors, the Badger State Pipeline Co., an affiliate of the Natural Gas Pipeline Co. of America, which now serves Chicago and other Illinois territories, and the Wisconsin Natural Gas Co., an affiliate of Western Natural Gas Co., which is an off-spring of an El Paso, Texas, gas producer. The pipe line will be constructed under the following conditions:

(1) Phillips Petroleum Co. has pledged to pay $1,250,000 to the American Light & Traction Co., holding company of the Milwaukee Gas Light Co., as compensation for those parts of its gas manufacturing plant which will be scrapped when natural gas flows into the mains. The certificate expressly provides that the $1,250,000 to be paid by Phillips Petroleum Co. shall not be returned by the public in the rate structure to be set up when natural gas is brought to Wisconsin.

(2) Wisconsin Gas Transmission Co., if it accepts the certificate, shall be required to file bond that it will furnish gas to operating utilities 18 months after the certificate is granted, unless prevented by future legislation or bona fide litigation. A daily penalty for each day's delay after 18 months is provided.

J. J. Hedrick, of Chicago, general counsel for the Natural Gas Pipe Line Co. of America, in expressing his disappointment over the Commission's failure to award the Certificate of Convenience and Necessity to his company, stated, "We can get gas up there faster because we already have our line completed to the Wisconsin border." Natural Gas Pipe Line Co. now serves Chicago and the line which is started to Wisconsin ties into the company's main pipe line to Geneseo, Illinois. (See *GAS*, December, 1940, pg. 13.) Natural Gas Pipe Line Co.'s line to Wisconsin will be used to serve Rock River valley communities in Illinois if the company is prevented from going into Wisconsin.

First application to serve Wisconsin natural gas was filed in June, 1940. Later that year the federal power commission conducted hearings in Madison relative to its own jurisdiction in the matter. The Wisconsin public service commission assumed jurisdiction to consider applications in April, 1941, after the federal agency decided it lacked jurisdiction.

■ ■

Kentucky Natural Builds Indiana-Illinois Lines

THE Kentucky Natural Gas Corp., Owensboro, Ky., has recently completed the construction of four pipe lines in Indiana and Illinois, according to William T. Stevenson, of the company. The Spang Chalfant Co., Pittsburgh, Pa., manufactured the pipe for the lines and the Wailes-Dove Hermiston Corp., Westfield, N. J., provided for the pipe protection.

A 4½-in. line, 10.9 miles long has been built from Terre Haute, Ind., to the Arketex Ceramic Corp. at Brazil, Ind., and will serve industrial gas to that plant. Another 4½-in. line has been constructed from the Oaktown, Ind., compressor station to Robinson, Ill. This 15-mile natural gas line supplies Gas Utilities, Inc., owners of a gas distribution system in Robinson, Ill. Population of Robinson is approximately 4500. More than 1000 domestic meters are being served natural gas for the first time.

To provide a market for gas developed by the Ohio Oil Co. in Unionville field, Monroe, county, Ill., a 2.7-mile line of 6⅝-in. pipe has been constructed and a 3.8 mile loop into Russellville Field, Lawrence county, Ill., has been built of 8⅝-in. pipe to increase deliveries from that field. The loop line is coupled, with couplings supplied by the Dresser Manufacturing Co., Bradford, Pa. The other three lines are acetylene welded.

■ ■

Memphis Natural Parallel Line Is Near Completion

Complete duplication of the Memphis (Tenn.) Natural Gas Co.'s entire 18-in. line from Monroe, La., to Memphis, a distance of 62 miles, will be laid this year, according to a statement from Burger L. Johnson, president of Memphis Natural.

Construction of the three final sections of the parallel line, to cost $1,200,000, and addition of two 1000-hp. compressor units at Guthrie, La., will begin in June, 1942. They will run 31.4 miles from Robinsonville, Miss., to Lula, Miss.; 14.5 miles south from Cleveland, Miss., and 16.1 miles north from Eudora, Ark.

The rest of the paralleling line was laid during the last two years at a total cost of $2,000,000. (See *GAS*, June, 1941, pg. 68 and September, 1941, pg. 30.)

Hope Natural Plans 772-Mile Line

A 772-MILE natural gas pipe line which will cost $30,000,000 is now being planned by the Hope Natural Gas Co., Clarksburg, W. Va. The line will extend from West Virginia to the natural gas reserve fields of Louisiana and Texas. The gas company has applied to the Office of Production Management for a preference rating on the project and for allocation of necessary materials, which will include 160,172 tons of 20-in. pipe. If materials are made available the line will be completed during 1942, company officials stated.

At the start the line will carry 100,000,000 cu. ft. of gas daily and will cross nine large rivers, including the Mississippi. It will cross Mississippi, Tennessee and Kentucky. The Hope company, together with the East Ohio Gas Co. and the Peoples Natural Gas Co., supplies natural gas to an area of concentrated industry in Ohio, Pennsylvania and West Virginia.

In 1939 the three companies supplied 31,300,000,000 cu. ft. of natural gas to the industries of the Pittsburgh-Cleveland-Youngstown area. It was estimated that defense demands in 1941 raised this figure to 48,200,000,000 cu. ft. For the duration of the emergency, the company calculated, total annual demands upon the Hope Natural would approach 80,000,000,000 cu. ft. judging from the sharp increase in demand experienced by the company during the war years of 1917-18. The West Virginia terminal of the proposed line will be in Kanahwa county.

DISTRICT OFFICES OF THE OFFICE OF PRODUCTION MANAGEMENT, DIVISION OF PRIORITIES, PRIORITIES FIELD SERVICE

Revised December 24, 1941

Location	*Address*	*District Manager*
Atlanta, Ga.	150 Hart Bldg.	John B. Reeves
Baltimore, Md.	1054 Baltimore Trust Bldg.	T. M. Chandlee
Birmingham, Ala.	302-306 Phoenix Bldg.	Martin J. Lide
Boston, Mass.	19 Congress St.	Donald T. Hood
Buffalo, N. Y.	212 M. & T. Bank Bldg.	Paul R. Smith
Charlotte, N. C.	16th Floor, Liberty Life Bldg.	J. E. MacDougall
Chicago, Ill.	20 North Wacker Drive	Malcolm R. MacDonald
Cincinnati, Ohio	34 East Fourth St.	James B. Harvey (Acting)
Cleveland, Ohio	East 6th St. and Superior Ave.	William T. Walker
Dallas, Texas	4th Floor Fidelity Bldg.	James B. Crockett
Dayton, Ohio	819 Third Natl. Bank Bldg.	Harold B. Doty
Denver, Colo.	521 U. S. Natl. Bank Bldg.	Virgil L. Board
Detroit, Mich.	7310 Woodward Ave.	Edmund H. Eitel (Acting)
El Paso, Texas	223 El Paso Natl. Bank Bldg.	Robert Stryker
Hartford, Conn.	Phoenix Bank Bldg.	Edwin L. Howard
Helena, Mont.	Room 222 Power Block House	Oscar A.Baarson
Houston, Texas	Federal Reserve Bank Bldg.	George L. Noble, Jr.
Indianapolis, Ind.	Circle Tower	Albert O. Evans
Jacksonville, Fla.	530 Lynch Bldg.	George H. Andrews
Kansas City, Mo.	1600 Federal Reserve Bank Bldg.	Charles B. Shaeffer
Knoxville, Tenn.	2nd Floor Goode Bldg.	Dyer Butterfield
Little Rock, Ark.	Rector Office Bldg.	Charles S. Christian
Los Angeles, Calif.	1026 Western Pacific Bldg.	Frank R. McGregor (Acting)
Louisville, Ky.	200 Todd Bldg.	James T. Howington
Memphis, Tenn.	2110 Sterick Bldg.	J. S. Bronson
Milwaukee, Wis.	1st Wis. Natl. Bank Bldg.	Frank J. Tharinger
Minneapolis, Minn.	326 Midland Bank Bldg.	Willard F. Kiesner
Nashville, Tenn.	1013 Stahlman Bldg.	George S. Gillen
New Orleans, La.	422 Canal Bldg.	John A. Bechtold
New York, N. Y.	122 East 42nd, Chanin Bldg.	Sydney Hogerton
Oklahoma City, Okla.	414 to 416 Key Bldg.	C. F. Aurand
Omaha, Neb.	512 Grain Exchange Bldg.	R. H. Fair
Philadelphia, Pa.	Room 660 Broad St. Station Bldg.	Frederick W. Slack
Phoenix, Ariz.	408 Security Bldg.	C. S. Jamison (Acting)
Pittsburgh, Pa.	403 Fulton Bldg.	Charles F. Cruciger
Portland, Ore.	806 Bedell Bldg.	John Fred Bergesch
Richmond, Va.	10 South 5th St.	F. P. Wilmer
St. Louis, Mo.	314 North Broadway	Ward H. Goodloe
Salt Lake City, Utah	Utah Oil Bldg.	Ralph E. Bristol
San Antonio, Texas	1116 South Texas Bank Bldg.	Carl Pool
San Francisco, Calif.	1355 Market St.	Andrew L. Kerr
Seattle, Wash.	960 Stuart Bldg.	William D. Shannon
Tampa, Fla.	901 Wallace South Bldg.	Herbert E. Brennan (Acting)
Tulsa, Okla.	416 Kennedy Bldg.	Alfred E. Ballin

Government Conference in Pittsburgh on Winter Gas

OFFICIALS of five natural gas companies and representatives of OPM, Army and Navy officers, and the Federal Power Commission attended a parley in the Chamber of Commerce Building, Pittsburgh, Pa., December 23, to learn how to maintain gas supply in the Pittsburgh district during winter peaks.

Gas firms participating in the parley included the Peoples Natural Gas Co., Equitable Gas, Manufacturers Light & Heat, United Natural Gas Co., and T. W. Phillips Gas & Oil Co.

E. M. Borger, president, Peoples Natural Gas Co., stated that the conference was concerned with maintaining the supply of gas to defense industry. It has always been Peoples Natural Gas Co.'s policy to interrupt service to industry when necessary to maintain service to domestic consumers. That practice will be continued except that special attention will be given to industries in national defense work.

This year, Mr. Borger stated, the company is in better shape than before. Regarding the future, the prospect is rather uncertain. An adequate supply will depend on Hope Natural gas Co.'s being able to bring in gas from Louisiana. (See column 1.)

During the past eight months many Pittsburgh manufacturing plants have set up "stand-by" fuel plants. In addition, gas producers in Green and other Pennsylvania counties have done considerable drilling in the last few weeks.

■ ■

Petroleum Conservation Law Asked of Illinois Governor

Petroleum Coordinator for National Defense Harold L. Ickes has addressed a message to Governor Dwight H. Green of Illinois suggesting that Governor Green ask the Illinois legislature to enact a petroleum conservation law if a special session is conducted.

A special session of the legislature is under consideration to deal with defense problems. Petroleum Coordinator Ickes declared in his message that there is no item in our whole national economy that is of more importance in the matter of defense than oil, and the wasteful production of it is something that all good citizens should combine to prevent.

Illinois is generally regarded by oil authorities as being one of the few oil producing states where production of oil has been carried on in a manner permitting waste. A number of unsuccessful efforts have been made to enact a conservation law deemed effective.

■ ■

Oklahoma Natural Expansion In 1942 to Cost $1,410,000

Joseph Bowes, president of the Oklahoma Natural Gas Co., Tulsa, Okla., has announced that the company's Board of Directors has approved the expenditure of $1,400,000 during this year for the addition and extension of the company's facilities.

He stated that approximately $150,000 would be for the increasing of gas reserves connected to the company's system; $550,000 for the addition of new transmission lines and the relocation and replacement of present lines; and approximately $600,000 for the improvement of the distribution systems in various cities and towns served by the company. A large portion of this amount must be spent in connecting to the company's system the new customers who have been brought into the territory by defense projects throughout the state.

SALES

Publicity Program Increases Use of Gas in Homes 49%

As result of a three-year publicity program, 49% more of the homes in our housing development use gas for heating, reports Franklin West of West Realty Co., Pittsburgh, Pa.

Three features put over gas heating for us in our development, says Mr. West. These are good wall and ceiling insulation in houses, forced air-conditioning system featuring economy and cleanliness, and cooperative and a sustained (three years) advertising program between gas company and development company to carry the story over a long period of time and fix it in the minds of the home-buying public.

In 1938, 50% of our homes had coal heat, but today, 99% of them have gas heat, and our major development has nearly 400 homes, Mr. West added, who believes that the job of gas companies and builders from 1942 possibly to 1946 will be to sell gas heat to users of inexpensive homes from $6000 down where opportunity for greater business volume exists, and to meet the same type of sales resistance involved in selling homes in the high-priced homes bracket three years ago.

■ ■

"Cookin' With Gas!"

A catchy, current-day expression with a history is "Now You're Cookin' With Gas!" which originated in the old-time vaudeville days. When actors reached the "big time" on Broadway, the aim of every actor and actress, their friends used the phrase to congratulate them. Now the expression is bobbing up in radio programs, motion pictures, and even comic strips. (See cut below.)

Metro-Goldwyn-Mayer's recent musical, "Lady Be Good," found use for the tag-line, as did Columbia's "Blondie in Society," which was based upon the newspaper cartoon strip. Ella Cinders, syndicated cartoon, also built one day's humorous situation around the expression.

One of the first gas companies to see the opportunity of tying-in the expression with both seasonal and local happenings in its newspaper advertisements was the Kansas City (Mo.) Gas Co. Under the direction of Ray Ratliff, advertising manager of the company, a series of cartoons publicizing baseball, football, bowling, the Community Fund, the U. S. O. and other current interest topics were planned in connection with the company's regular local newspaper advertising.

The cartoon on this page was a part of the series mentioned above and first appeared in the *Kansas City Journal*. It was later reprinted in "Fuel For Thought," company magazine of the Hartford (Conn.) Gas Co.

■ ■

B. C. Electric Railway Tells Results of Range Campaign

RESULTS of the old range round-up, just announced by the British Columbia Electric Railway Co., Vancouver, B. C., reveals a total of 231 sales. This is the last merchandising event to be staged by the B. C. Electric for the duration of war and it was held in the face of increasing difficulties due to stock shortages, price rises and installment sales restrictions imposed by the government. Added to these difficulties was the complete absence of large apartment house orders which helped to create the record of 342 units sold in the round-up a year ago.

The B. C. Electric in its showrooms sold 90 straight gas and seven combination units as against 166 straight gas and 23 combination units a year ago. Cooperating dealers sold 68 straight gas ranges and 66 combination ranges as against 84 and 69, respectively, the previous year. Wosk's headed the list of dealers with 26 gas range sales. Y. Franks was second with 19 sales and Forst's Ltd. third wth 18 sales. A. R. Henshall headed the list of B. C. Electric salesmen with a total of 17 sales to his credit.

McLennan, McFreely & Prior Ltd. carried off the award in the class A division window contest which was confined to the department stores and larger dealers. In the class B division, which was composed of other dealers, the Alberta Furniture Co. won the first prize, McCallum's Hardware the second prize and the Melny's Furniture Store the third place.

■ ■

Local Radio Program Traces History of Gas Company

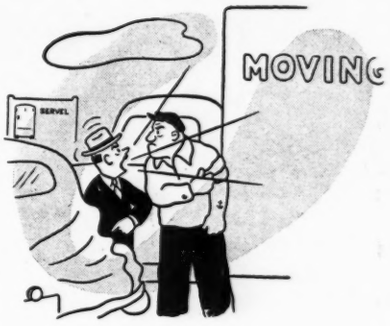
In cooperation with the Santa Barbara (Calif.) Chamber of Commerce, the Southern Counties Gas Co., with headquarters in Los Angeles, used a question and answer style of radio script to trace the history of the growth of population and gas service in Santa Barbara and nearby communities during the last 50 years. George W. Smith, district manager of the Santa Barbara division of the company, represented the gas company in answering the questions.

■ ■

Sunday Newspaper Publicity Draws Crowds to Studio

Results of full-page newspaper publicity run in successive Sunday editions for 10 weeks has proved complimentary to the studio, and brought large crowds, reports Mrs. Sarah Tomlinson, founder and director of the home arts studio of Rosenbaum's department store, Pittsburgh, Pa.

The studio "played to packed houses," particularly pleasing to manufacturers of Servel and Roper gas ranges and refrigerators in that Sunday advertising reached a wider range of readers in more-distant localities.



"Quiet, Clarence! Take a tip from Servel..."
IT STAYS SILENT... LASTS LONGER

SERVEL ELECTROLUX GAS REFRIGERATOR

SERVEL's permanent silence has won it a lasting place in the hearts of more than 1,500,000 American families. So has its continued low operating cost... its freedom from wear. And with good reason: for only the Gas Refrigerator has NO MOVING PARTS in its freezing system!

NATURAL GAS COMPANIES
Serving the Greater Pittsburgh Area

Among a series of six cartoon-type advertisements publicizing the natural gas companies which serve the greater Pittsburgh (Pa.) area, this ad appeared in several local newspapers. General layout of the ads was similar, with variations of the cartoon theme.

Full-page publicity featured first, several photographs of groups entertained weekly in the studio (one photograph published weekly); second, three publicity stories published each week about the cooking school; and third, "This Week's Schedule," a daily listing of groups scheduled for entertainment during the coming week. Gas advertising featured most prominently in the advertising program; grocery-product advertising ran second; linen and linoleum advertising followed.

■ ■

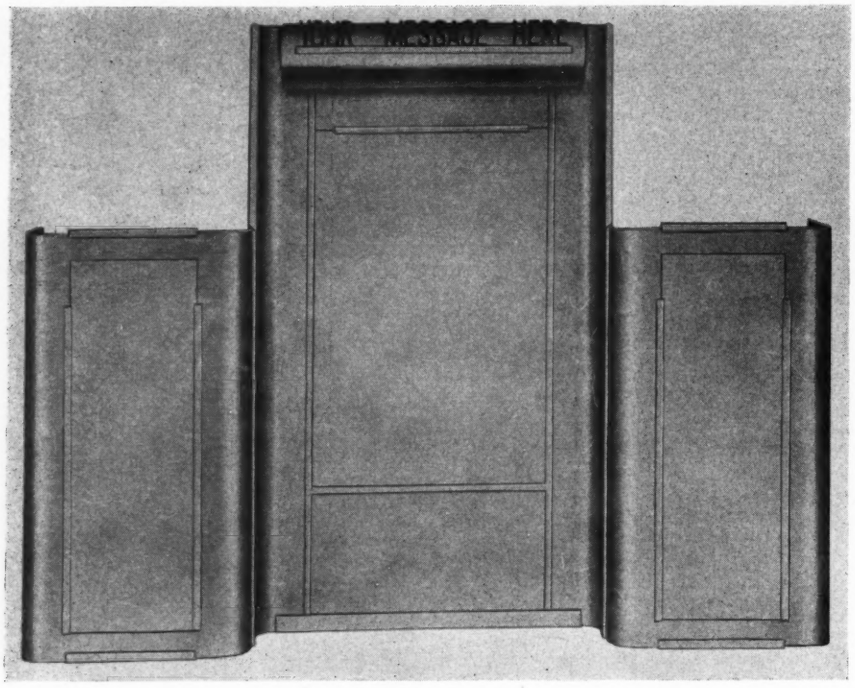
Oklahoma Natural Sponsors Contest to Publicize State

"Let's Sell Oklahoma Nationally—How I Would Do It" is the subject of the recently concluded contest sponsored by the Oklahoma Natural Gas Co., Tulsa, Okla. Four hundred dollars in cash was given for the eight best answers—$200 as first prize; $100, second; $50 third; and five $10 awards. All essays were submitted to the Oklahoma Press Association, Oklahoma City, and five prominent men in the state have been selected to judge the entries. The entries are now being judged and the winners will be named at an early date.

■ ■

Roper Bowling Teams Take Names of District Managers

Tieing-in employee relations with their field organization, the Geo. D. Roper Corp., Rockford, Ill., has 16 teams in the Roper Bowling League, each team named for a company district manager located in one of the 16 key territories of the organization. The Roper Bowling League was organized six years ago with four teams.



Two-way gas display.

A Brand New Idea in Display

THE Bishop Publishing Co. of Chicago recently announced a brand new idea in display that is available to their customers in the Gas Industry. It is a large display backing (they call it a Two-Way Appliance Backing) that serves as a holder for the standard Bishop Two-Way Gas Displays and works equally well with or *without* appliances. It is a very flexible unit with which several attractive arrangements can be made. The entire backing, as well as the displays, shows two ways, both front and back—a decided advantage in open windows or on sales floors. In addition, it will also fit flush against a wall or back of window.

The standard Bishop Gas Background Displays slide into opening in both side sections and the Gas Jumbo Display fits in the center section. Displays can be removed and new ones inserted in an instant. Blank Masonite panels, the size of the displays and finished the same as the backing, are also furnished for the card openings so that these can be blanked out, if wished.

With this backing an entire display can be set up, or changed, in practically no time at all. Tools are not necessary for there are no complicated arrangements in its construction. Each section is complete in itself. To assemble the complete unit, as illustrated, the sections are simply slipped together.

It is permanently constructed and molded of ⅛-in. Masonite and lacquer finished, both sides, in a neutral buff. Smooth flowing curves and attractive finish give a modern design that will blend into any office interior.

Also available from the Bishop Publishing Co., for use with this backing, is a font of 3-in. finished letters cut out of Masonite which can be used for the message on the top pieces. These cut-out letters slip into grooved channels on front of each top piece. Any message or slogan wished can be inserted here.

■ ■

Wisconsin Utility Employees Subscribe for Defense Bonds

Employees of gas, electric and transportation companies in Wisconsin are patriotically and enthusiastically participating in the payroll allotment plans for the purchase of United States Defense Bonds, which companies have made available for them, according to reports received by L. F. Seybold, president of the Wisconsin Utilities Association, and chairman of the Public Utilities Division of the Defense Savings Committee for Wisconsin. Employees of some departments of companies have already made 100% subscriptions.

■ ■

A.G.A. Ad Committee Issues Seventh Filler Series

The American Gas Association Committee on National Advertising has just issued the Seventh Series of "More Than 40 Short Stories and Fillers About Gas Fuel and Gas Appliances." The stories and fillers are keyed to the news of the day and for use in local news columns, special newspaper sections, mailing pieces and company magazines.

Informative Cards Are Given New Gas Range Customers

THE Arkansas-Louisiana Gas Co., Little Rock, Ark., has been distributing informative cards to its new gas customers for the past several months, according to C. B. Wilson of the company.

Double-faced, and measuring 9 in. by 12 in., one side of the card is headed, "There's Nothing Like Gas for Cooking, Water Heating, Refrigeration, House Heating," with the "reason why" given in every instance. Listed below, under the heading "Kitchen Kinks," a series of informative tables is given, which is intended to answer many questions that might perplex the average housewife.

The opposite side of the card is devoted to a Cooking Chart headed, "There's Nothing Like Gas for Baking, Roasting, Broiling, Boiling, Frying," with the reason why also given in every instance. The Cooking Chart occupies the balance of the space on this side of the card with the exception of that given over to the explanation of the use of the chart; the pre-heating of the oven; roasting methods, and a statement regarding CP which reads:

"When you use gas for cooking, and most good cooks do, you get more for the money you spend, and you can give your family better and more healthful meals at the same time. Considered from every angle it will pay you to cook the modern way . . . the cheaper, faster, better way . . . with gas and a modern Certified Performance gas range."

■ ■

'Southern Union News' Wins Contest For House Organs

The *Southern Union News*, house organ published at Dallas, Texas, by and for the employees of the Southern Union Gas System, outclassed all other house organs in a contest which was sponsored by the Dallas Advertising League last fall. First publication of the *Southern Union News* was in July, 1934. Its editor, since its beginning, has been Mrs. Alta Ewalt Evans, director of advertising and employees' relations for the Southern Union System. The company operates properties in Texas, Oklahoma, Arkansas and New Mexico.

Once every year the British Columbia Electric Railway Co., Ltd., Vancouver, B. C., stages an Old Range Round-up to stimulate gas range sales. Special advertising, special windows and dealer display material is developed. This photo of one of the company's show windows indicates the type of presentation employed by the firm.

California Gas Heating Manufacturers Organize

J. S. ANDREWS, president, Institute of Gas Heating Industries, an organization of manufacturers and dealers of gas heating equipment in southern California, has announced that the Institute has expanded its activities for greater cooperation with the National Defense Program and to improve the standards of heating installations.

F. O. SUFFRON

It was also announced that the Institute has established offices at 1709 West Eighth Street in Los Angeles and the services of F. O. Suffron have been secured as managing director. Mr. Suffon has been connected with the American Gas Association Testing Laboratories for the past 11 years and during that time spent three years as supervisor of the Pacific Coast branch.

Objectives of the organization are:

1. Cooperation on National Defense Program.
2. To correlate and act as a clearing house for priority information to its members.
3. Cooperation with communities in development of heating codes and ordinances.

Training Course for Appliance Salesmen

THE California State Department of Education, cooperating with the Pacific Coast Gas Association, has just completed a Sales Training Course for gas appliance salesmen. The course will be made available to individuals, associations and other groups interested in retail merchandising of gas appliances. In California, under the provisions of the George-Dean Act, instructors will be provided for classes in communities where a program of distributive education is in operation. No doubt, similar arrangements can be made in other states which are cooperating with the Federal government in encouraging sales training.

This course is made available in fourteen separate units, each unit dealing with one phase of selling gas appliances. Titles are as follows:

1. Gas Information Manual for Salesmen.
2. Science and Art of Successful Selling.
3. What Makes People Buy Gas Appliances.
4. The Salesman and the Sales.
5. When Customers Call.
6. Prospecting from Inside the Store.
7. Getting Business Outside the Store.
8. The Development and Use of a Prospect File.
9. Preparing to make an Effective Sales Presentation.
10. Making an Effective Gas Range Presentation.
11. Making an Effective Presentation of Automatic Gas Water Heaters.
12. Making an Effective Gas Refrigerator Presentation.
13. Making an Effective Presentation of Gas Heating.
14. Types and Traits of Prospects.

Each pamphlet can be made the subject of one or more class room sessions as the instructor may elect. A number of quiz questions emphasizing the important points in each pamphlet is included. It will be noted that the early lessons are on the art of selling and that in Lessons 10, 11, 12 and 13 this art is applied to specific appliances.

The course is business Education Publications, No. 7, of the Bureau of Business Education, California State Department of Education, Sacramento, Calif. The title of the course is "Sales Training Program for Gas Appliance Dealers and Salesmen, Merchants, Plumbers and Distributors." The fourteen units comprising the course contain 215 pages, mimeographed on standard size (8½ by 11½) sheets, 20-lb. stock; each unit is separately assembled and stapled in flexible covers.

It was prepared by Ferris M. Wakeley, a staff instructor of the Bureau of Business Education, under the supervision of Dr. Ira W. Kibby, Chief of the Bureau. Assisting in an advisory capacity was a committee of the Pacific Coast Gas Association headed by O. R. Doerr, general sales manager, Pacific Gas and Electric Co., and including R. V. Davis, Southern California Gas Co., Murray Holloway, San Diego Gas and Electric Co., and Harrison Musgrave, Southern Counties Gas Co., together with members of the staff of the Bureau of Business Education.

Copies of the course may be purchased from the California State Department of Education for 20 cents a unit or $2.50 a set of 14 units. Address: California State Department of Education, Bureau of Business Education, 114 Haviland Hall, University of California, Berkeley, Calif.

"Maybe with these blackouts you'll wish you bought a gas range."

ASSOCIATIONS

Natural Gas Meeting Plans Take Shape

IN preparation for the 37th Annual Natural Gas Section Convention of the American Gas Association to be held in New Orleans, La., May 4-7, 1942, committee members of the section met at the Hotel Muehlebach, Kansas City, Mo., on December 12. On this page is a picture taken at the luncheon meeting of the program committee. On the outside of the table from left to right are:

J. I. Cormany, The Gas Service Co., Kansas City, Mo.; Melvin V. Harlin, Cities Service Gas Co., Bartlesville, Okla.; John L. Gere, Cities Service Gas Co., Bartlesville, Okla.; J. G. Dickinson, Texoma Natural Gas Co., Amarillo, Texas; C. H. Koinm, The Gas Service Co., Kansas City, Mo.; F. M. Rosenkrans, The Gas Service Co., Kansas City, Mo.; J. R. Guidroz, New Orleans Public Service Inc., New Orleans, La.; H. L. Gaidry, New Orleans Public Service Inc., New Orleans, La.; J. H. Warden, Oklahoma Natural Gas Co., Tulsa, Okla.; E. L. Rawlins, Union Producing Co., Shreveport, La.; Robert W. Hendee, Colorado Interstate Gas Co., Colorado Springs, Colo.; B. R. Bay, Northern Natural Gas Co., Omaha, Neb.; E. H. Poe, secretary, Natural Gas Section, A. G. A., New York, N. Y.; E. M. Borger, Peoples Natural Gas Co., Pittsburgh, Pa.

H. J. Larson, Northern Natural Gas Co., Omaha, Neb.; Julian L. Foster, Lone Star Gas Co., Dallas, Texas; E. C. Joullian, Consolidated Gas Utilities Co., Oklahoma City, Okla.; Lee Woodward, Zenith Gas System, Alva, Okla.; Lyman H. Bell, The Central West Utility Co., Kansas City, Mo.; J. C. Reinbold, Panhandle Eastern Pipe Line Co., Kansas City, Mo.; Clyde C. Phillips, Ohio Fuel Gas Co., Columbus, Ohio; Robert W. Ducker, Oklahoma Natural Gas Co., Tulsa, Okla.; Ray T. Ratliff, Kansas City Gas Co., Kansas City, Mo.; J. P. Crowe, Kansas City Gas Co., Kansas City, Mo.; Paul C. Ford, Kansas City Gas Co., Kansas City, Mo.

On the inside of the table from left to right are:

F. S. Kelly, Jr., Arkansas-Louisiana Gas Co., Shreveport, La.; D. W. Reeves, Oklahoma Natural Gas Co., Tulsa, Okla.; C. J. Dodds, Kansas Public Service Co., Lawrence, Kan.; H. C. Porter, Kansas City Gas Co., Kansas City, Mo.; C. U. Daniels, Oklahoma Natural Gas Co., Tulsa, Okla.; C. B. Wilson, Arkansas-Louisiana Gas Co., Little Rock, Ark.; J. W. West, Jr., secretary, Residential Section, A. G. A., New York, N. Y.; J. C. Sackman, Northern Indiana Public Service Co., Hammond, Ind.

Also attending the meeting but not shown in the picture were:

A. L. Mullergren, Western Light and Telephone Co., Kansas City, Kan.; F. L. Rupp, Union Gas System, Independence, Kan., and Jack Torbert, The Wyandotte County Gas Co., Kansas City, Kan.

Personnel of the new Executive and Managing Committees are:

Executive Committee: J. French Robinson, chairman, The East Ohio Gas Co., Cleveland, Ohio; B. R. Bay, vice chairman, Northern Natural Gas Co., Omaha, Neb.; H. C. Cooper, Sewickley, Pa.; J. D. Creveling, Panhandle Eastern Pipe Line Co., New York, N. Y.; T. B. Gregory, Pittsburgh, Pa., and N. C. McGowen, United Gas Pipe Line Co., Shreveport, La.

Managing Committee: J. French Robinson, chairman; B. R. Bay, vice chairman; B. C. Adams, The Gas Service Co., Kansas City, Mo.; Joseph Bowes, Oklahoma Natural Gas Co., Tulsa, Okla.; A. F. Bridge, Southern Counties Gas Co., Los Angeles, Calif.; Floyd C. Brown, Natural Gas Pipeline Co. of America, Chicago, Ill.; D. W. Harris, Arkansas Natural Gas Corp., Shreveport, La.; D. A. Hulcy, Lone Star Gas Co., Columbus, Ohio; F. H. Lerch, Jr., Gas Companies, Inc., New York, N. Y.; G. J. Neuner, Panhandle Eastern Pipe Line Co., Kansas City, Mo.; E. L. Rawlins, Union Producing Co., Shreveport, La., and C. H. Zachry, Southern Union Gas Co., Dallas, Texas.

Chairmen of the remaining committees of the section are as follows:

Advisory Committee: H. D. Hancock, chairman, Gas Advisers, Inc., New York, N. Y.; Elmer F. Schmidt, vice chairman, Lone Star Gas Co., Dallas, Texas.

Natural Gas Production Committee: C. U. Daniels, chairman, Oklahoma Natural Gas Co., Tulsa, Okla.; L. T. Potter, vice chairman, Lone Star Gas Co., Dallas, Texas.

Natural Gas Transmission Committee: B. M. Laulhere, chairman, Southern California Gas Co., Los Angeles, Calif.; R. H. Ulrich, vice chairman, Southern Natural Gas Co., Birmingham, Ala.

Industrial and Commercial Natural Gas Sales Committee: D. W. Reeves, chairman, Oklahoma Natural Gas Co., Tulsa, Okla.; F. S. Kelly, Jr., vice chairman, Arkansas-Louisiana Gas Co., Shreveport, La.

Residential Natural Gas Sales Committee: C. B. Wilson, chairman, Arkansas-Louisiana Gas Co., Little Rock, Ark.

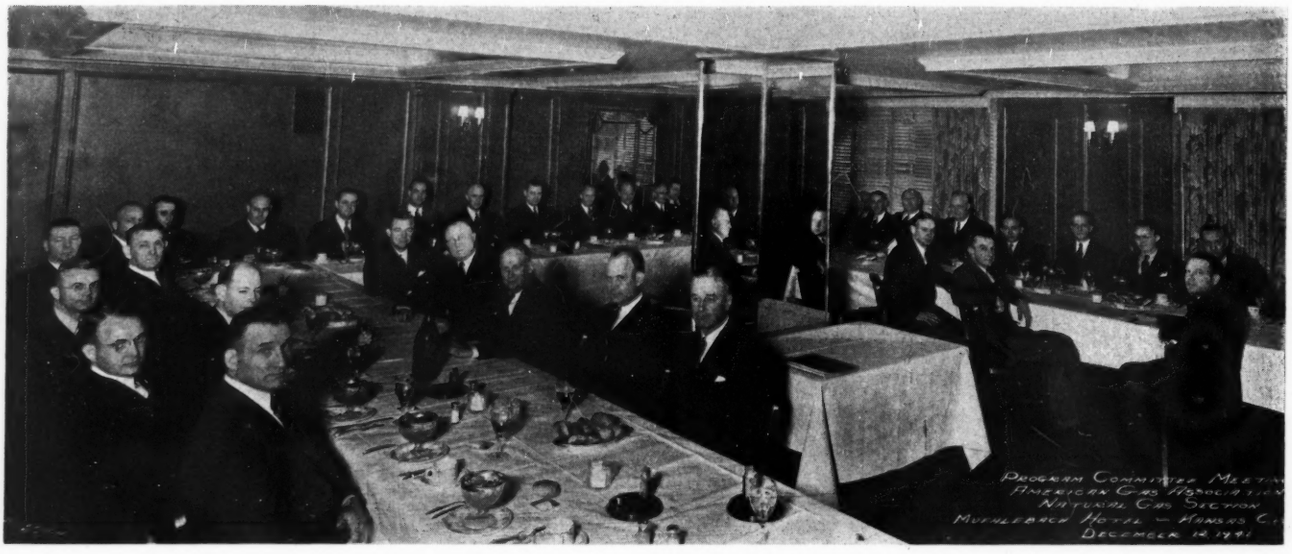
Main Technical and Research Committee: H. C. Cooper, chairman, 114 Centennial Ave., Sewickley, Pa.; Thomas R. Weymouth, vice chairman, Greenwich Lodge Apts., Greenwich, Conn.

Sub-Committee on Gas Well Deliveries: N. C. McGowen, chairman, United Gas Pipe Line Co., Shreveport, La.

Gas Measurement Sub-Committee: Thomas R. Weymouth, chairman, Greenwich Lodge Apts., Greenwich, Conn.

Pipe Line Sub-Committee: H. D. Hancock, chairman, Gas Advisers, Inc., New York, N. Y.

Sub-Committee on Code for Testing Nat-



SAVE VITAMINS—TODAY'S VITAL FOOD ELEMENTS

With

WEDGEWOOD'S

★

COOKING FEATURES

★

ALLTROL SPEED-SIMMER BURNERS—Cooks vegetables with little or no water.

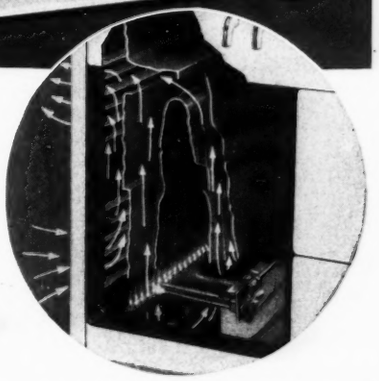
★

ASTOGRIL BROILER—Makes broiled meats better tasting.

★

LOW-TEMPERATURE OVEN—Better Roasts. Natural juices retained.

★



Heats Your Rooms

•

Cooks Your Food

•

With

Gas
THE MODERN FUEL

In conserving valuable food vitamins and providing cheerful warmth to chilly rooms, WEDGEWOOD CP Model 6285 serves a dual purpose . . . keeping families healthy and happy. Consistently high standards of satisfaction are constantly maintained by such features as WEDGEWOOD divided top, top griddle and warmer, Astogril smokeless broiler, high-speed, low-temperature oven, and built-in gas circulating heater.

WEDGEWOOD GAS RANGES MAKE NEW FRIENDS FOR GAS

WEDGEWOOD

THE MODERN GAS RANGE

JAMES GRAHAM MANUFACTURING CO. • Los Angeles - San Francisco - Newark, Calif. - Portland, Oregon

ural Gas for Gasoline Content: George P. Bunn, chairman, Phillips Petroleum Co., Bartlesville, Okla.

Nominating Committee: H. D. Hancock, chairman, Gas Advisers, Inc., New York, N. Y.

Sub-Committee on Dust Prevention in Natural Gas Pipe Lines: T. H. Kerr, chairman, The Ohio Fuel Gas Co., Columbus, Ohio.

Wrinkle Committee: V. A. Ogilvie, chairman, Gas Advisers, Inc., New York, N. Y.

Wrinkle Award Committee: Don Sillers, chairman, Lone Star Gas Co., Dallas, Texas.

Committee on Supply Men's Fund: Elmer F. Schmidt, chairman, Lone Star Gas Co., Dallas, Texas.

Committee on Vocational Education: M. V. Cousins, chairman, United Gas Pipe Line Co., Shreveport, La.; Q. R. Dungan, secretary, Cities Service Gas Co., Bartlesville, Okla.

Plans were drafted at the meeting for a program which will endeavor to solve the war emergency problems of the natural gas industry. Full discussions of these problems as they apply to production and transmission of natural gas as well as to the sale of natural gas were scheduled for the meeting of the section next May.

J. E. Dare Heads A.G.A.'s New Space Heating Committee

NEWLY formed—"to study and make an analysis of present and future markets for, and desirability of the industrial space heating load"—is the Industrial Space Heating Committee of the American Gas Association Industrial and Commercial Gas Section. James E. Dare, Public Service Company of Northern Illinois, Streator, is leading the group in its year's inquiry announces 1942 Section Chairman, George F. B. Owens.

The 1942 program now in progress includes an exhaustive study of the unit heater type, with attention being given to: competitive conditions affecting sales . . . sales methods . . . and equipment installation information.

Mr. Dare's co-workers are: George L. Ballard, Panhandle Eastern Pipe Line Co., Springfield, Ill.; Robin A. Bell, Surface Combustion Corp., New York; Walter N. Blinks, General Gas Light Co., Kalamazoo, Mich.; Charles F. Cushing, The Bryant Heater Co., Cleveland, Ohio; Sheldon B. Lee, National Utility Co. of Michigan, Benton Harbor, Mich.; Robert H. Lind, Peoples Gas Light Co., Davenport, Iowa; E. H. Ronsick, The St. Louis County Gas Co., Webster Groves, Mo., and Eugene D. Milener, American Gas Association, New York, secretary.

The Committee hopes to report data gathered at the A.G.A. Industrial and Commercial Gas Sales Conference in Pittsburgh, March 12 and 13.

■ ■

Wisconsin Utilities Gas Men Set Dates for Convention

CHAIRMEN and vice chairmen of the Gas Section, Wisconsin Utilities Association, together with the chairmen of the nine committees which serve the Technical and Commercial Divisions conferred in Milwaukee on December 12 on Convention dates and the importance of preparedness in times of defense.

The Divisions selected March 16 and 17 as the dates for the Spring Convention which will be held at the Schroeder Hotel, Milwaukee, and discussed protection of plants and distribution systems against sabotage and bombing, activities in blackouts and preparedness for changeover to natural gas.

George S. Hawley, president of the American Gas Association, has been invited to the convention to present the national point of view on the pressing problems of the times. Programs were outlined for one-day sessions of the Technical and Commercial Divisions, with each concluding their conferences with committee round table discussions.

Participants in the conference were Section Chairmen O. W. Barenscher and C. A. Debell; Vice Chairmen E. C. Hemes and John Felton; Committee Chairmen John Dopp, Deane True, George Helf, B. T. Franck, A. G. Blitz, L. A. Lankie, Richard Koch, J. B. Druse, and several committee members including Henry Dropp, Frank Burns, W. J. Gehr, R. W. Stafford, P. C. Keuch, and C. B. Dushane, Jr.

■ ■

New England Association Operating Division Confers

The operating division of the New England Gas Association will meet at the Hotel Bradford in Boston, Mass., on Wednesday afternoon, January 14, at 2 o'clock to hold a discussion conference on current defense problems. Discussion leaders are as follows:

Production: B. L. Peables, chairman; G. C. Pearl, vice chairman.

Meters: A. W. Johnston, Jr., chairman; F. H. Faulstich, vice chairman.

Distribution and Utilization: D. W. Price, chairman; S. F. McCallister, vice chairman.

At the evening session, to be held at 7:30 o'clock the same day, Joseph Duffy, Nantucket (R. I.) Gas & Electric Co., will address the group on "Flexibility of a Small Water Gas Set" and C. S. Goldsmith, assistant engineer of distribution, The Brooklyn (N. Y.) Union Gas Co., will speak on "Defense Preparations in Distribution Work."

■ ■

P.C.G.A. Proceedings to Be Mailed Early This Month

The Pacific Coast Gas Association has announced that the mailing of the Proceedings for the year 1941 will take place early in January. The delay has been occasioned by the highly technical nature of some of the reports, necessitating great care in assem-

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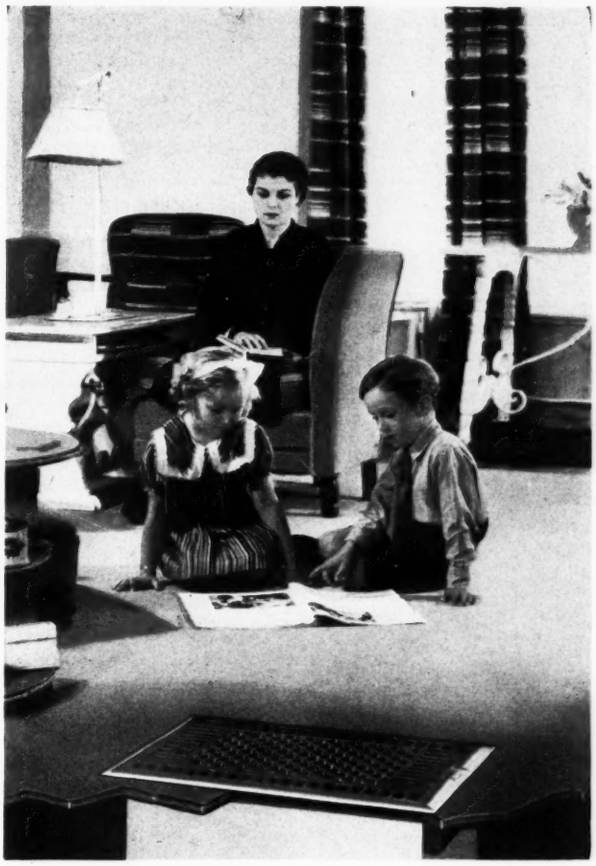
A warmth warden that is on constant "alert"



NOW that all our dollars have red, white and blue strings on them . . . it is good to think about the thrifty things, the things that save money for the making of military might.

For economical performance, the all-gas Ward Floor Furnaces you have installed are real *All-Americans.*

A warmth warden that is on constant "alert," the Ward burns your gas sparingly. Just enough to heat the desired area. No warmth is wasted in unoccupied parts of the house. This is one of the fine virtues of the floor furnace. It does a dependable heating job where it needs to be done . . . and it does not burn fuel to warm places that do not require heat.

Ward's *bilt-in thermo-control* is on guard always to control automatically the flow of gas so that just enough is used to preserve the desired, healthful heat level.

Wards are saving, too, of your man power. You know from long experience that you have practically no service problems with a Ward Floor Furnace. It goes on year after year minding its own business, leaving your maintenance men free for the many unusual jobs developing out of the emergency.

★ ★ ★

So much for the Ward Floor Furnaces you have installed. About those you would like to install in 1942? That, of course, is on the knees of the war gods. How many we will build . . . how many we can deliver to you . . . depends on how close the all-out war effort brings us to being all out of the materials from which Wards are made.

Whatever happens . . . we are in this together . . . and the way we face it will have a lot to do with what each of us is going to amount to when it is all over.

Tough going bounces some folks upstairs . . . joggles the spirit out of others.

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Thirty-two years of service to the gas industry

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FACTORY REPRESENTATIVES: A. S. KINCAID, *Southern Manager*, P. O. Box 5, Dallas, Tex.; J. H. STUBBINS, 300 E. 68th Terrace, Kansas City, Mo.; H. C. SANDERSON, 207 Fulton Bldg., Pittsburgh, Pa.; L. E. KIRKPATRICK, 1700 15th St., Denver, Colo.; LEON M. TAYLOR, 3200 Main St., Dallas, Tex.

bling. Most difficult of these has been the report on Water Flow Calorimetry prepared by the committee headed by Guy Corfield and edited by a sub-committee of Frank Wills, W. A. McGlashen and R. E. Many.

This report collects scattered data on gas calorimetry and also includes much that is original with the committee. It will be included in the Proceedings in the form of a supplement separately paged and indexed. The procedure was used to facilitate reprinting. It is expected that reprints will be offered for sale by the Association.

■ ■

Gas Industry Is Represented At Restaurant Exposition

GAS men were active at the annual Southeastern Regional Restaurant Convention and Exposition, which was held at the Mayflower Hotel in Washington, D. C., December 1-3. Gas service and gas equipment was featured by means of displays, stage demonstrations, and talks by representatives of the industry. Gas industry participation in the convention was arranged under the direction of Leon Ourusoff, of the Washington Gas Light Co. Several thousand were in attendance, with representatives from 28 states.

Under the joint sponsorship of the Washington (D. C.) Gas Light Co., and leading equipment manufacturers, a space in the main lobby of the hotel was equipped with heavy-duty broilers, ranges, deep fat fryers, toasters, grilles and bake ovens, and a gas year-'round air conditioner. A unique attention-getter was an arrangement like a telephone booth in the center of the gas display, presided over by Miss Mary Nielsen, who asked visitors to speak into a microphone and record their suggestions for bettering gas service and gas appliances. Later a prize was given for the suggestions deemed most valuable.

Among the speakers at the convention were: W. Frank Roberts, president, Standard Gas Equipment Corp.; Eugene D. Milener, American Gas Association, New York; J. F. Pitman of J. C. Pitman & Sons, Inc., Lynn, Mass.; and W. L. Webster, Savory, Inc., Newark, N. J.

■ ■

A.G.A. Industrial Committee Studies Defense Metals

ROBERT C. LEMAY, The Connecticut Light & Power Co., Waterbury, Conn., has been appointed 1942 Chairman of A.G.A.'s Industrial and Commercial Gas Section's Metal Treating and Melting Committee, according to an announcement by George F. B. Owens, chairman.

Other members, hailing from various sections of the country, are: John P. Brosius, Equitable Gas Co., Pittsburgh, Pa.; Hale A. Clark, Michigan Consolidated Gas Co., Detroit, Mich.; Elmer C. Cook, American Gas Furnace Co., Elizabeth, N. J.; Clayton S. Conkright, Public Service Electric & Gas Co., Newark, N. J.; Joseph H. Gumz, Pacific Gas & Electric Co., San Francisco, Calif.; Frederic O. Hess, The Selas Co., Philadelphia, Pa.; John Huston, The Bridgeport (Conn.) Gas Light Co.; Charles B. Kentnor, Jr., W. S. Rockwell Co., New York, N. Y.; Frederick W. Marklin, Philadelphia (Pa.) Electric Co.; Gerald C. Marrs, Consumers Gas Co., Reading, Pa.; Oliver Pritchard, The Brooklyn (N. Y.) Union Gas Co.; Henry Robinson, American Brass Co., Waterbury, Conn.; S. Proctor Rodgers, Consolidated Gas Electric Light & Power Co. of Baltimore (Mass.); C. George Segeler, A.G.A., New York, N. Y.; Philip T. Stroup, Aluminum Co. of America, New Kensington, Pa.; and Eugene D. Milener, A.G.A., New York, N. Y., secretary.

The group's work plan is investigation and study of heat treating of metals with gas for war production with emphasis on aluminum and its alloys. It also encourages the purchase of emergency equipment during the war and later in peacetime operation.

■ ■

A. G. A. Sectional Sales Conferences Are Announced

George F. B. Owens, chairman of the Industrial and Commercial Gas Sections of the American Gas Association, has announced that the two annual A. G. A. sales conferences will be combined into one 1942 meeting. The A. G. A. Industrial and Commercial Gas Sales Conference will be held in Pittsbugh, Pa., March 12-13.

A local committee, composed of C. B. Mershon, The Manufacturers Light & Heat Co., chairman; F. B. Jones, Equitable Gas Co.; Irving D. Ross, The Peoples Natural Gas Co., all of Pittsburgh, and W. L. Sarver, T. W. Phillips Gas and Oil Co., Butler, Pa., with the help of other gas men and equipment manufacturers is planning a program of value to all industrial and commercial gas men. Ways of making industrial and commercial gas more effective in production of war materials and in servicing camps, bases, cantonments, etc., will be the conference theme.

CALENDAR

January

New England Gas Association, Operating Division — Round-table discussions, dinner, business session, Boston, Mass., January 14.

Pennsylvania Natural Gas Men's Annual Meeting—Pittsburgh Athletic Association, Pittsburgh, Pa., January 16.

Pennsylvania Gas Association Annual Midwinter Sales Meeting—Benjamin Franklin Hotel, Philadelphia, Pa., January 23.

February

Southern Gas Association and A. G. A. Southern-Southwestern Gas Sales Conference—Biltmore Hotel, Atlanta, Ga., February 9-11.

March

American Gas Association Industrial and Commercial Gas Sales Conference—Pittsburgh, Pa., March 12-13.

Wisconsin Utilities Association, Commercial and Technical Divisions, Gas Section, Annual Meeting — Schroeder Hotel, Milwaukee, Wis., March 16-17.

New England Gas Association, 16th Annual Business Conference — Hotel Statler, Boston, Mass., March 19-20.

Oklahoma Utilities Association — Oklahoma City, Okla., March 23-24.

April

Mid-West Gas Association Annual Convention—Sioux City, Iowa, April 13-15.

Gas Meters Association of Florida-Georgia—Savannah, Ga., April 19-21.

Southwestern Gas Measurement Short Course—University of Oklahoma, Norman, Okla., April 21-23.

May

Annual American Gas Association Natural Gas Section Convention — Roosevelt Hotel, New Orleans, La., May 4-7.

Pacific Coast Gas Association Technical Section Meeting — San Francisco, Calif., May 21-22 (tentative).

June

Canadian Gas Association, 35th Annual Meeting—Windsor Hotel, Montreal, Canada, June 4-5.

Pacific Coast Gas Association Sales and Advertising Section Meeting — San Francisco, Calif., June 4-5 (tentative).

Pacific Coast Gas Association Accounting Section Meeting—San Francisco, Calif., June 11-12 (tentative).

September

Pacific Coast Gas Association Annual Convention — San Francisco, Calif., September 28.

24th Annual Convention, American Gas Association — San Francisco, Calif., week of September 29.

Southern Gas Meeting Set For Feb. 9-11 in Atlanta, Ga.

The Southern Gas Association will meet at the Biltmore Hotel in Atlanta, Ga., Feb. 9-11, according to L. L. Baxter, secretary of the association.

Speakers at the meeting will be A. B. Patterson, president of the New Orleans (La.) Public Service Co.; George S. Hawley, Bridgeport (Conn.) Gas Light Co., and president of the American Gas Association; Frank C. Smith, Houston (Texas) Natural Gas Co.; George S. Jones, Servel, Inc., Evansville, Ind., and Davis M. DeBard, Stone & Webster Service Corp., New York, N. Y.

H. Carl Wolf, president of the Atlanta (Ga.) Gas Light Co., is president of the Southern Gas Association. The residential sales conference is headed by J. H. Warden, Oklahoma Natural Gas Co., Tulsa, Okla.; the industrial gas sales conference by H. G. D'Spain, Mississippi Public Service Co., Amory, Miss.; the technical gas sales conference by H. N. Oldham, New Mexico Eastern Gas Co., Carlsbad, N. M.; and the home service conference by Miss Emma Wood, Louisiana Public Utilities Co., Inc., Lafayette, La.

■ ■

Oklahoma Utilities Meeting Sets Date for Convention

At a recent meeting of the executive committee of the Oklahoma Utilities Association it was decided that the annual convention of that organization will be held in Oklahoma City, Okla., March 23-24, according to W. L. Woodward, president of the Zenith Gas System, Inc., Alva, Okla., and newly-elected president and chairman of the emergency committee of the association which was formed at the same meeting. The emergency committee will cooperate with the government in the national defense effort.

Officers elected at the meeting were: Mr. Woodward, president; J. C. Happenny, first vice president; E. C. Joullian, second vice president; B. M. Lester, treasurer, and Kate A. Niblack, secretary. Three-year term directors are: S. I. McElhoes, and Mr. Woodward. One-year directors are: J. P. Arnold, Mr. Happenny, R. K. Lane (retiring president of the association), Glen C. Kiley and Frank B. Long. Holdover directors are: C. A. Breitung, George A. Davis, Mr. Joullian and A. F. Potter.

■ ■

Gas Equipment Displayed At Chemical Exposition

New developments in the chemical requirements of defense, as well as products and processes useful in civilian pursuits were viewed by over 50,000 engineers, technicians, production men and purchasing agents at the 18th National Exposition of Chemical Industries held in Grand Central Palace, New York, N. Y., December 1-6.

■ ■

A. G. A. Convention Opens In San Francisco, Sept. 29

The Executive Board of the American Gas Association has set Tuesday, September 29, as the opening day of its 24th Annual Convention. The Pacific Coast Gas Association will hold its annual meeting on Monday, September 28, at the same location.

ABSTRACTS

These papers were presented at the 23rd Annual Convention of the American Society for Metals, Philadelphia, Pa., Oct. 20-24, 1941.

The Heat Treatment of the Chromium-Carbon Stainless Steels—W. E. Mahin and W. C. Troy, Metallurgical Engineers, Feeder Engineering Department, Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pa. A high purity hydrogen-nitrogen inert atmosphere has been used for heat treatment of the hardenable 12% chromium steels with freedom from the usual oxide films. Advantage is taken of the "air hardening" characteristics of the steel, and close hardness control is obtained through control of the carbon content of martensite. The carbon in martensite is dependent upon carbon content of the steel (above the A_1 point) in the hypoeutectoid steels, but only upon quenching temperature in the hypereutectoid steels. Tempering treatments are used only for control of residual stresses. A small methane addition to the atmosphere was found to provide surface hardness above 60 Rockwell "C" for applications where maximum wear resistance and toughness are required. A number of interesting applications for the martensitic stainless steels are pointed out. Among these, frequent use was made of simultaneous furnace brazing and hardening.

Methods for Determining the Degree of Carburization or Decarburization and Evaluating Controlled Atmospheres—Norbert K. Koebel, Director of Research, Lindberg Engineering Co., Chicago, Ill. The author describes in this paper various methods for determining the degree of carburization or decarburization and for evaluating controlled atmospheres. The methods discussed are (a), the hardness test, (b), photomicrograph, (c), analysis of consecutive cuts and (d), the change in weight. Special emphasis is placed on the sensitivity, accuracy, sources of error, limitations, and advantages and disadvantages of each method. The effect of various atmospheres on tool and high carbon steels are used to illustrate the sources of error, limitations, accuracy, and the use of each method. Curves, charts, and photomicrographs are used to show how the various methods can be used to evaluate and determine the efficiency of a controlled atmosphere.

Chemical Equilibrium as a Guide in the Control of Furnace Atmospheres—A Review of Equilibrium Data—J. B. Austin, Research Laboratory, U. S. Steel Corp., Kearny, N. J., and M. J. Day, Metallurgical Division of the Carnegie Illinois Steel Corp., Chicago, Ill. The concept of equilibrium and the properties of the equilibrium constant, particularly its significance in relation to the control of conditioned atmospheres in metallurgical furnaces, are described and illustrated by typical reactions for iron and steel. Selected values of the equilibrium constant are given for the several reactions:

$$Fe + H_2O = FeO + H_2$$
$$Fe + CO_2 = FeO + CO$$
$$CO + H_2O = CO_2 + H_2$$
$$C + CO_2 = 2CO$$
$$CH_4 = C + 2H_2$$
$$Fe_3C + CO_2 = 3Fe + 2CO$$
$$CH_4 + 3Fe = Fe_3C + 2H_2$$

Prevention of Oxidation Type of Reaction in the Heat Treatment of Copper and Its Alloys—E. G. de Coriolis, Director of Research, Surface Combustion Corp., Toledo, Ohio, and Wm. Lehrer, Development Department, Surface Combustion Corp., Toledo, Ohio. Controlled atmosphere furnaces have in recent years become increasingly predominant in the heat treatment of copper and its alloys. The fundamental reactions of the various gas constituents comprising the protective atmosphere with these metals are well known as are the other factors frequently encountered in their heat treatment such as sulphur, lubricants on the work and delayed discoloration. Copper and its alloys with silver and nickel can be bright annealed in an atmosphere produced by the controlled combustion of fuel gas with a slight deficiency of air. In case of sulphur-bearing fuel gases, provisions must be made for the removal of sulphur. The alloys of copper with zinc, tin, lead and aluminum are normally clean annealed only. Certain precautions are necessary in the application of the protecting atmosphere to the furnace so as to safeguard against any air intrusion.

IN STEP WITH THE TIMES - -

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PEOPLE

P. M. Downing, vice president and general manager of the Pacific Gas and Electric Co., San Francisco, Calif., was the recipient of a 40-year pin, awarded by employees of the company, at a luncheon held at the Palace Hotel, San Francisco, last month. A 50-year badge was presented to **Cyril E. Holt,** transfer agent in charge of bond registration and stock transfers, and a 35-year badge was bestowed upon **J. F. Coghlan,** vice president and assistant to **James B. Black,** president of the company, who was also present.

P. M. DOWNING

• •

It has been announced that the presidency of the Indiana State Chamber of Commerce has been conferred on **Louis Ruthenburg,** president of Servel, Inc., Evansville, Ind. Mr. Ruthenburg was elected at a general membership meeting of the Chamber, held in Indianapolis recently. Other new officials elected at the meeting to serve with Mr. Ruthenburg were: **Dean H. Mitchell,** the first vice president, president of the Northern Indiana Public Service Co., Hammond, Ind.; second vice president, **George F. Olive,** head of an accounting firm in Indianapolis, and third vice president, **John W. Crise,** of Fort Wayne, who is executive assistant of the General Electric Co. Mr. Ruthenburg became president of Servel, Inc., in 1934.

• •

Thomas J. Strickler, chairman of the gas industry's national advertising committee, has announced the appointment of three additional members to the copy committee which works with the agency, McCann-Erickson, Inc., of New York, in executing the details of the campaign. The three new appointments are **J. S. Spaulding,** advertising manager, Southern California Gas Co., Los Angeles, Calif., who has served as a member of the national committee since the inauguration of the campaign six years ago; **Thomas H. Spain,** advertising manager, Public Service Electric & Gas Co., Newark, N. J., and **Charles W. Kimball,** sales manager, The Hartford Gas Co., Hartford, Conn.

• •

John V. Rerucha, former engineer with the Ohio Fuel Gas Co., Columbus, Ohio, has been appointed vice president and general manager of the Columbia Burner Co., Toledo, Ohio, manufacturers of conversion burners for domestic house heating.

• •

Bryon E. Young, former employee of the Southern California Gas Co., Los Angeles, Calif., has retired from active service under the company's uniform pension plan. Mr. Young spent 30 years in the gas industry.

E. O. HOWLE

E. O. Howle, president of Condensation Engineering Corp. and The Howle Co. of Chicago, manufacturers of the Condensation Eliminator, Howle Heat Extractor and the Howle Panel Heaters, has been elected president of the Medinah Club of Chicago, called "America's Finest Family Club." For a number of years he has served on the Board of Governors of the club and was recently named president.

• •

Baird Snyder has been named Acting Administrator of the Wage and Hour Division, by Secretary of Labor **Frances Perkins.** Mr. Snyder, who served as Deputy Administrator under **General Philip B. Fleming,** now Federal Works Administrator, will head the Division until further notice. Mr. Snyder attended Cornell and Yale Universities and was graduated from Massachusetts Institute of Technology in 1924 as a civil engineer. His first engineering work was a survey of coal lands in Venezuela; and he was later assistant superintendent of Lawrence Colliery at Mahanoy Plane, Pa. He subsequently operated a factory at Elyria, Ohio, and headed his own construction company. He became Principal Engineer of the Resettlement Administration several years ago, where he was first associated with General Fleming. He was later Chief Engineer of the Farm Security Administration before coming to the Wage and Hour Division in 1939, and became Deputy Administrator of the Division in June, 1940.

• •

Joseph Bowes, president of the Oklahoma Natural Gas Co., Tulsa, Okla., has announced that **A. F. Holmes** is to succeed **J. A. Ray** as the Oklahoma Natural District Manager at Enid. Mr. Ray is being transferred to Tulsa to take the position of public relations director. Mr. Holmes joined Oklahoma Natural in Tulsa in 1918. Four years later he was employed in the materials department of the general warehouse. Later he became superintendent of materials for the Oklahoma Natural system. In 1940 Mr. Holmes was transferred to Oklahoma City where he took the position of assistant superintendent of distribution.

• •

Alvin F. Traver, general manager of the Jacksonville (Fla.) Gas Co., has been elected president of that utility by the board of directors. He will continue to serve as general manager. A graduate of the University of Michigan, where he held the Michigan Gas Association Fellowship in Gas Engineering, Mr. Traver, before becoming employed with the Jacksonville Gas Co. four years ago, held executive positions with the American Commonwealth Power Corp., Gas Utilities, Inc., Henry L. Doherty Co., Denver Gas and Electric Co., Chattanooga Gas Co., and Grand Rapids Gas Light Co.

• •

C. V. Coons, of Rheem Manufacturing Co., New York, N. Y., has been appointed general manager of sales for his company. **R. E. James** and **V. R. Woolsey** have been appointed assistant general managers of sales and **Frank J. Nugent** has been named to the post of sales manager of the appliance division. Mr. Nugent has transferred his head-

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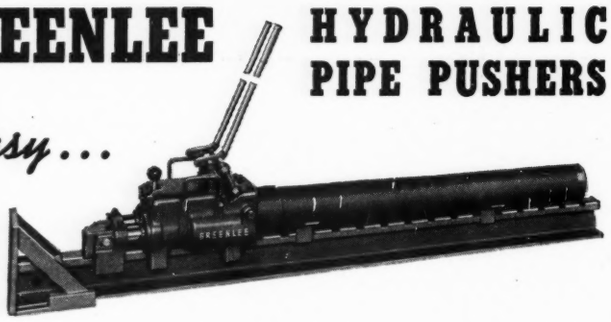

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quarters from Houston, Texas, where he has operated as southern sales manager for three years at the Sparrows Point, Maryland, plant of the company.

• •

The recent retirement of **M. R. Thompson** as first vice president in charge of construction, Southern Counties Gas Co., Los Angeles, brought about the following changes in the company's general office organization: **F. A. Hough,** formerly distribution engineer, was made executive engineer and assumes general supervision of operation and construction. He will be assisted by **C. F. Briscoe, H. A. Faull,** and **N. K. Senatoroff.** Mr. Briscoe's title will be construction engineer; Mr. Faull, formerly assistant distribution engineer, will be meter and regulator engineer; Mr. Senatoroff, formerly research engineer, will be chemical engineer.

F. A. HOUGH

• •

Twelve veteran employees of Oklahoma Natural Gas Co., Tulsa, Okla., representing 605,000 man-hours of work and holding service records up to 41 years, were given an "Appreciation Dinner" at the Oklahoma Club in Oklahoma City, Okla., recently. They are the first to benefit under a new retirement program put in force by the company last summer, under which monthly pension payments will be made to augment compensation from social security. **Charles Joray,** with a record of 41 years with the gas company, is oldest in point of service. Other veteran employees are **W. W. Bruce, R. H. Everett, Frank Braun, J. F. Friel, T. M. Ryan, J. M. Miller, J. F. Myers, H. L. Bruce, W. L. Edwards, Floyd Byars,** and **Woody Mineo. Tom H. Sterling,** district manager in Oklahoma City, was toastmaster at the dinner and **Joseph Bowes,** president of the company, addressed the group. **George Frederickson,** vice president of the company, was also present.

• •

Greer Warren, of Kingfisher, Okla., has been transferred to the Rogers, Ark., office of the Arkansas Western Gas Co., which has headquarters in Fayetteville, Ark.

• •

J. H. Gumz has been appointed commercial and industrial sales manager, for the Pacific Gas and Electric Co., San Francisco, Calif., succeeding the late **Harry Carroll.** A member of the Pacific Coast Gas Association for 20 years, much of Mr. Gumz' activity with the company has been in the gas sales department for commercial and industrial uses. He attended the University of Illinois, and entered the utility business in 1913 with Western United Gas and Electric Co., Aurora, Ill., and later was with Public Service Co. of Northern Illinois, Evanston, Ill. He joined Pacific Gas and Electric Co. in 1922.

Dr. William R. Hainsworth, vice president of Servel, Inc., Evansville, Ind., in charge of engineering, and national authority in the field of refrigeration research, has been elected president of the American Society of Refrigerating Engineers. Dr. Hainsworth, who has been engaged in refrigeration research more than 20 years, succeeds **L. L. Lewis,** vice president of the Carrier Corp., Syracuse, N. Y., retiring president of the society. In 1933, Dr. Hainsworth was awarded the Charles A. Munroe Award by the American Gas Association for his contributions to the gas industry in the field of scientific research. Becoming affiliated with Servel in 1929, Dr. Hainsworth undertook the direction of extensive research on air cooling and improvements in domestic and commercial refrigeration. In 1935 he became vice president in charge of engineering.

DR. W. R. HAINSWORTH

Dr. Hainsworth's interest in automatic refrigeration dates back more than 20 years when he was a Du Pont Fellow in the Massachusetts Institute of Technology from which he received his Ph. D. degree. In 1922, while a research associate at that institution, he pioneered in the development of phototelegraphy which later resulted in the successful transmission of photographs by direct wire and its many commercial usages. Dr. Hainsworth is a graduate of the University of Washington and a member of the Industrial Research Institute executive committee.

• •

H. E. Felt, vice president of Warren Petroleum Corp., Tulsa, Okla., in charge of the liquefied petroleum gas division of that company, has announced the appointment of **G. L. (Jerry) Brennan** as manager of that division. Mr. Brennan has been with Phillips Petroleum Co., Bartlesville, Okla., for 12 years and resigns as assistant manager of the special products department of that firm to accept his new position. A graduate of the University of North Dakota, Mr. Brennan was at one time sales manager of the liquefied petroleum gas division of that company and later became manager of wholesale sales to industrial and utility companies located in the Detroit area. In addition to Mr. Brennan, the division staff will consist of **Fred J. LaFortune, P. J. Hoagland, Allen S. James** and **Kenneth T. White.**

• •

Robert F. Gibbs, since 1939 commercial agent for Southern Counties Gas Co.'s eastern district with headquarters in Pomona, Calif., has been named commercial agent for the company in Santa Maria. His place is being filled by **Floyd S. Parmenter,** who has served since 1934 as sales representative in Monrovia. Transfer of Mr. Gibbs to Santa Maria was occasioned by the recent merger of the Santa Maria Gas Co. with Southern Counties Gas Co. *(GAS,* Nov., 1941, pg. 44.)

• •

William H. Wildes, president of Republic Natural Gas Co., Dallas, Texas, has been elected to the I.P.A.A. executive committee.

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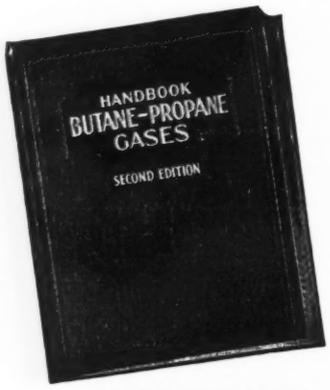
Spang Chalfant, Inc., Pittsburgh, Pa., has announced the appointment of **Frank W. Morris** as manager of sales, West Coast territory, succeeding **J. V. Greer,** resigned. Mr.

HANDBOOK BUTANE-PROPANE GASES



415 Pages

CONTENTS: Semi-Bulk Distribution: Use of Butane in Buses: Combination Propane Operated Utility Plant: Use in Internal Combustion Engines: Design and Installation of Storage: Supply from Petroleum Refineries: Engineering Data on the Lower Olefins: Domestic Appliance Testing and Utilization: Economical Comparisons with Coal, Oil, Electricty, Producer Gas, Manufactured Gas: Town Plants: Manufacture from Natural Gas: Special Uses: Volume Correction Factors: Transportation: Use with Other Gases: Analysis and Testing: Properties of Mixtures: Bottled Gas Distribution: Bibliography: Central Plant Directory: Catalog Section.

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Defense Savings Pay-Roll Allotment Plan

How company heads can help their country, their employees, and themselves

voluntary pay-roll allotment plan | helps workers provide for the future | helps build future buying power | helps defend America today

This is no charity plea. It is a sound business proposition that vitally concerns the present and future welfare of your company, your employees, and yourself.

During the post-war period of readjustment, you may be faced with the unpleasant necessity of turning employees out into a confused and cheerless world. But you, as an employer, can do something *now* to help shape the destinies of your people. Scores of business heads have adopted the Voluntary Pay-roll Allotment Plan as a simple and easy way for every worker in the land to start a *systematic* and *continuous* Defense Bond savings program.

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And don't overlook the immediate benefit . . . money for defense materials, quickly, continuously, *willingly*.

Let's do it the American way! America's talent for working out emergency problems, democratically, is being tested today. As always, we will work it out, without pressure or coercion . . . in that old American way; each businessman strengthening his *own* house; not waiting for his neighbor to do it. That custom has, throughout history, enabled America to get things done *of its own free will*.

In emergencies, America doesn't do things "hit-or-miss." We would get there *eventually* if we just left it to everybody's whim to buy Defense Bonds when they thought of it. But we're a nation of businessmen who understand that the way to get a thing done is to *systematize* the operation. That is why so many employers are getting back of this Voluntary Savings Plan.

Like most efficient systems, it is amazingly simple. All you have to do is offer your employees the convenience of having a fixed sum allotted, from each pay envelope, to the purchase of Defense Bonds. The employer holds these funds in a separate bank account, and delivers a Bond to the employee each time his allotments accumulate to a sufficient amount.

Each employee who chooses to start this savings plan decides for himself the denomination of the Bonds to be purchased and the amount to be allotted from his wages each pay day.

How big does a company have to be? From three employees on up. Size has nothing to do with it. It works equally well in stores, schools, publishing houses, factories, or banks. This whole idea of pay-roll allotment has been evolved by businessmen in cooperation with the Treasury Department. Each organization adopts its own simple, efficient application of the idea in accordance with the needs of its own set-up

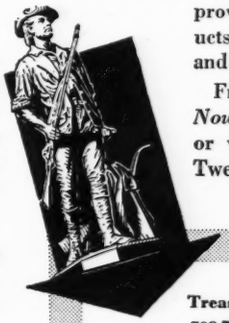
No chore at all. The system is so simple that A. T. & T. uses exactly the same easy card system that is being used by hundreds of companies having fewer than 25 employees! It is simple enough to be handled by a check-mark on a card each pay day.

Plenty of help available. Although this is *your* plan when you put it into effect, the Treasury Department is ready and willing to give you all kinds of help. Local civilian committees in 48 States are set up to have experienced men work with you just as much as you want them to, and no more.

Truly, about all *you* have to do is to indicate your willingness to get your organization started. We will supply most of the necessary material, and no end of help.

The first step is to take a closer look. Sending in the coupon in no way obligates you to install the Plan. It will simply give you a chance to scrutinize the available material and see what other companies are already doing. It will bring you samples of literature explaining the benefits to employees and describing the various denominations of Defense Savings Bonds that can be purchased through the Plan.

Sending the coupon does nothing more than signify that you are anxious to do *something* to help keep your people off relief when defense production sloughs off; *something* to enable *all* wage earners to participate in financing Defense; *something* to provide tomorrow's buying power for your products; *something* to get money *right now* for guns and tanks and planes and ships.



France left it to "hit-or-miss" . . . and *missed*. *Now* is the time for *you* to act! Mail the coupon or write Treasury Department, Section A, 709 Twelfth St. NW., Washington, D. C.

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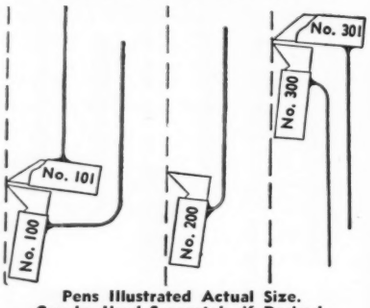

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Morris' headquarters will be in the Ohio Oil Building, Los Angeles. He has been associated with the Spang Chalfant sales organization for a number of years and just recently was manager of sales for the Dayton Pipe Coupling Division of National Supply Co., Pittsburgh, Pa.

• •

James F. Hunter, vice president of Consolidated Edison Co. of New York, Inc., retired from that company on December 31. Mr. Hunter has spent 37 years in the gas departments of Consolidated Edison System Companies. During Mr. Hunter's career, the company built two of the world's largest gas plants, at Astoria, L. I., and at Hunts Point in the Bronx, much of these big undertakings coming under his direct supervision. In 1904 Mr. Hunter started as a draftsman in the construction department of Consolidated Gas Co. (which was the name of the company then) and became successively engineer's assistant, field engineer, and engineer of construction. He was elected an assistant vice president of Consolidated Edison in 1937, three years later becoming vice president in charge of gas production, technical service, and gas storage and control. Mr. Hunter holds a mechanical engineer's degree from Stevens Institute of Technology in New Jersey, and is a member of the American Society of Mechanical Engineers, the Society of Gas Lighting, and the American Gas Association.

• •

W. P. Gage, manager of Shell Oil Co.'s development division, has been appointed vice president in charge of manufacturing and technical development for the Shell Chemical Co. Mr. Gage joined the company in 1929 as a junior chemist at the Wood River refinery near St. Louis and two years later was placed in charge of the experimental laboratory. In November, 1939, he was called to head the development division of the manufacturing department.

Succeeding Mr. Gage is **G. C. Cunningham,** formerly assistant superintendent at the Houston refinery who joined Shell in 1929. Moving up from manager of the gas department at the Houston refinery to succeed Mr. Cunningham is **Albert Garrison,** who joined Shell in 1929. **Glenn Purcell,** senior technologist at the Wood River refinery, moves to Houston to fill the position vacated by Mr. Garrison. Mr. Purcell is a graduate of the University of Oklahoma and has been with the company since 1929.

• •

In New York last month the National Association of Manufacturers elected as their president, **William Porter Witherow,** president of Blaw-Knox Co., Pittsburgh, Pa. Mr. Witherow (a Yale graduate, 1908) went immediately into steel with his first job in the engineering and operations department of Jones & Laughlin Steel Corp. In 1913, at 25, he organized the Witherow Steel Co. The Witherow process, used extensively in the automobile industry, provided for the die-rolling of many shapes and sections of steel formed previously by forging, casting, and other slower methods. With a series of mergers in the late 1920's he became chairman of Donner Steel Co., and upon the company's consolidation with Republic Steel Corp., he became a Republic vice president. He was elected president of Blaw-Knox in 1937.

• •

H. L. Farrar, president of Coast Counties Gas and Electric Co., Santa Cruz, Calif., has announced the following personnel changes: **Louis Wollenberger,** formerly district manager of the Imperial division, office in El Centro, is now industrial gas engineer, with headquarters in the company's general office, Santa Cruz; **E. C. Drew,** formerly sales engineer, general office, becomes service supervisor, general office; **C. R. Hayden,** formerly district manager of the Hollister district, office in Hollister, is now district manager of the Imperial division, office in El Centro; **W. R. Snyder,** formerly company representative in the Valley division, office in Los Banos, is now district manager of the Hollister district, office in Hollister; **G. H. Loosmore,** formerly salesman in the Santa Cruz district, is now company representative in the Valley division, office in Los Banos.

• •

W. Alton Jones, president of the Cities Service Co., New York, N. Y., has been appointed chairman of the newly-formed subcommittee of the Petroleum Industry Council for National Defense, according to **W. R. Boyd, Jr.,** chairman of the council. The subcommittee will determine what contribution users of gasoline and oil in the United States can make to the war effort by following a policy of rational conservation. Other members of the subcommittee are **W. S. S. Rodgers,** president, The Texas Co., New York, N. Y.; **Col. J. Frank Drake,** president, Gulf Oil Corp., Pittsburgh, Pa.; **Wm. F. Humphrey,** president, Tide Water Associated Oil Co., San Francisco, Calif.; and **Col. T. H. Barton,** president, Lion Oil and Refining Co., El Dorado, Ark.

W. ALTON JONES

• •

James D. Dingwell, Jr., assistant vice president in charge of personnel relations of the Washington Gas Light Co., Washington, D. C., has been appointed chairman of the committee on personnel practices of the American Gas Association by **George S. Hawley,** president of the association. Mr. Dingwell has been active in the affairs of the A. G. A., having served in the commercial section prior to becoming a member of the committee on personnel practices in 1938. He entered the public utility industry in 1924 in the accounting department of the Blackstone Valley Gas and Electric Co., Pawtucket, R. I. In 1939 he became sales manager of that organization. In August, 1933, Mr. Dingwell was appointed assistant general sales manager of the Washington Gas Light Co. and in 1937, assistant vice president in charge of personnel relations.

• •

The Brooklyn (N. Y.) Union Gas Co. has announced the following promotions in its new business department: **Jack B. Frost,** formerly assistant industrial sales manager, was named industrial sales manager. He succeeds **Carl L. Wierum,** who has been called for naval duty. **Edward A. Koster** will succeed **Leonard Genz** as supervisor of the apartment house division, in addition to retaining his post as supervisor of the new development division. Mr. Genz has been called for naval duty. **Carlton W. Roll,** formerly industrial sales engineer, will succeed Mr. Frost as assistant industrial sales manager.

• •

Clarence J. Coberly, president of Kobe, Inc., was elected a director of Consolidated Steel Corp., Ltd., at its recent meeting of the board of directors. Mr. Coberly will fill the vacancy which occurred on the death of **Donald G. Henderson.** He is a graduate of Stan-

ford University and became identified with the California Compressed Gas Co. in 1918. His interest in developing a scientifically engineered well screen resulted in the invention of the Kobe Process and pipe slotting equipment, now covered by more than 40 U. S. and foreign patents. Kobe, Inc., was formed in 1923 and derived its name from Mr. Coberly's nickname. He is a member of the A.S.M.E., the A.I.M.E. and the A.P.I.

• •

J. M. Swink, formerly manager of the Fredericktown, Mo., office of the Missouri Natural Gas Co., with headquarters in Farmington, Mo., has been transferred to the Poplar Bluff office as salesman. **Robert Williams,** formerly salesman at the Bonne Terre office, is the new manager at Fredericktown.

Obituaries

James F. Noonan

James F. Noonan, head of the collection department, The Laclede Gas Light Co., St. Louis, Mo., and an employee of that company for the past 30 years, died December 16, following a stroke he suffered several weeks previous. Mr. Noonan started with Laclede as a clerk in the adjustment department in 1912. Later, he became head of the adjustment department and 10 years ago was appointed supervisor of the collection department. Mr. Noonan served in World War I and a military funeral was conducted.

• •

A. G. Dibbins

Arthur G. Dibbins, 49, former district manager of the Community Natural Gas Co., at Durant, Okla., died recently. Mr. Dibbins had been associated with the Lone Star Gas Co., Dallas, Texas, and its subsidiaries for the last 25 years. He was at the Durant office almost three years and served as district manager of the company at Guthrie, Okla., for 12 years prior to that time.

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Walter Grimm

Walter Grimm, director of the Gas and Water Works at St. Gall, Switzerland, and former president of the Swiss Gas and Water Association, died recently. Mr. Grimm presided at the meeting of the Swiss Gas and Water Association at Zurich in 1934, which immediately preceded the Triennial meeting there of the International Gas Union.

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J. F. O'Donnell

John F. O'Donnell, salesman of heavy duty gas cooking equipment for the eastern sales division of the American Stove Co., died recently in New York. Mr. O'Donnell joined the Standard Gas Equipment Corp. as sales representative in 1926 in Chicago and in 1933 was transferred to New York. He became associated with the American Stove Co. in 1939.

• •

F. R. Lowell

F. R. Lowell, manager of engine sales for National Supply Co., Toledo, Ohio, division of Spang Chalfant, Inc., Pittsburgh, Pa., was killed in an airplane crash on the Northwestern lines near Fargo, N. D., recently.

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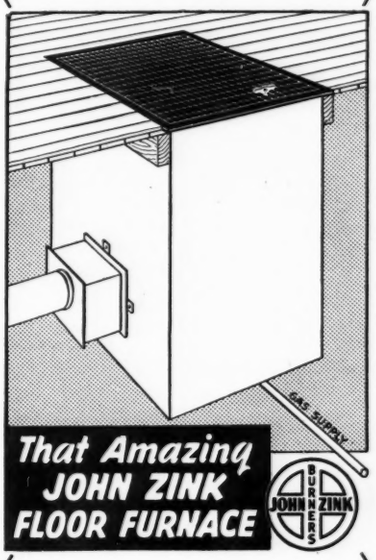

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RESEARCH

EACH MONTH a competent staff reviews more than 70 publications serving the gas, oil and affiliated industries in a search for those published articles of value to technicians and executives in the gas industry. In this department of GAS, brief abstracts of such articles are presented.

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Technical

Petroleum Refinery Engineering—W. L. Nelson; 2nd Edition, 1941; 715 pages; 201 illustrations and graphical presentations; 106 tables; numerous solutions of illustrative design problems. Published by McGraw-Hill Book Co., Inc., New York and London. This book deals mainly with the fundamentals of engineering design and of chemical engineering processes as applied in refineries. In addition to bringing material up to date, the second edition contains new chapters entitled "Rebuilding Hydrocarbons," "Auxiliaries to Processing" and "Solvent Treating or Extraction Processes." New material is also presented on multiple-component fractionation, catalytic processes, and solvent dewaxing.

Annual Report of Research and Technologic Work on Coal, Fiscal Year 1941—Arno C. Fieldner and L. D. Schmidt. United States Department of the Interior, Bureau of Mines, Information Circular I. C. 7190. Deals essentially with the general subject of coal technology. Has a section on coke and gas making, with brief discussion of by-product coke ovens and recent investigation of the coking possibilities of Washington (state) coals. Also has a section on the mechanism of combustion and explosion of gaseous fuels, in which a study of the fundamentals of the hydrogen-oxygen reaction is outlined. Also describes a current study of the mechanism of the stationary (Bunsen type) flame, wherein the velocity and direction of the gas emerging from the orifice and entering and leaving the flame cone is observed by photographic means involving the injection into the gas of finely-powdered aluminum particles. Preliminary photographs show a parabolic distribution of velocity across the stream, as is found in fluids traveling in pipes. As the stream travels upward, momentum transferred from the fast moving central layers and friction at the stationary boundary flatten the velocity distribution.

Improving the Lubrication of Gas Engines—*Lubrication*, Oct., 1941, pp. 109, etc. Good lubrication of a gas engine implies reasonable freedom from wear and carbonaceous deposits. To bring about this desirable condition, more than the correct application of the proper lubricant is required. Air and gas entering the engine must be free from injurious substances and mixed in the proper proportions. The mixture must be fired at the right moment and the heat generated carried away by efficiently operated cooling and exhaust systems. The modern gas engine is a well designed and sturdily constructed machine, and if the operator keeps the load and speed within the range for which the engine was designed, carefully controlling the conditions just enumerated, good lubrication should result. The January, 1937, issue of *Lubrication* described the fundamentals of gas engine lubrication—this article is chiefly a discussion of the many related maintenance problems.

Recent Design Developments in Amine Gas Purification Plants—R. M. Reed and W. R. Wood. *Transactions of American Institute of Chemical Engineers.* Formulas previously developed for calculating maximum allowable gas velocities in bubble plate absorber towers used in gasoline absorption have been adapted to the designing of bubble plate towers for use in treating gases for hydrogen sulphide or carbon dioxide removal with amine solutions. In certain cases where impurities in the gases treated have produced foaming tendencies in the amine solutions, absorbers packed with Raschig rings have been found to be preferable to bubble plate towers. Methods developed by Sherwood and others for calculating maximum gas velocities in packed columns have proved suitable for use in designing packed absorbers for gas purification witih amine solutions. The process of removing hydrogen sulphide or carbon dioxide from amine solutions by boiling is described, and the methods used for determining the acid gas content of the solutions are given. The reactivation of monoethanolamine solutions containing carbon dioxide is incomplete at 230° F. and atmospheric pressure, but becomes nearly complete at 296° F. and 24 pounds per sq. in. gauge pressure.

Mechanical Concentration of Gases—C. G. Maier, U. S. Bureau of Mines Bulletin No. 431. Sold by Superintendent of Documents, Washington, D. C., price 20 cents. Sets forth the principles of "atmolysis," a possible new but as yet commercially undeveloped technology for the separation of gases by purely mechanical means, utilizing the diffusive properties of gases of different molecular weight. The apparatus visualized, and experimented with on a laboratory scale, consists essentially of a diffusion boundary, a condensible vapor as a diffusive medium, and facilities for introducing the feed gas and removing the concentrated or pure separated component, and the residue gas. Such a technique could be used, for instance, to separate pure hydrogen from reformed natural gas or manufactured gas.

Control of Gas-Oil and Water-Oil Ratios by Chemical Treatment—H. T. Kennedy. *Oil and Gas Journal*, Nov. 6, 1941, pp. 92, etc. This paper describes typical chemical treatments for reduction of gas and water-oil ratios by the plugging of selected portions of the producing formations, and mentions briefly similar treatments applied to cable-tool drilling wells to shut off excessive water. Records of six water plugging treatments, chosen to represent various successful treating methods, and 11 gas plugging treatments are included. The latter group consists of all the applications up to the present time of chemical plugging methods to the wells of two major companies in the Goldsmith Pool,

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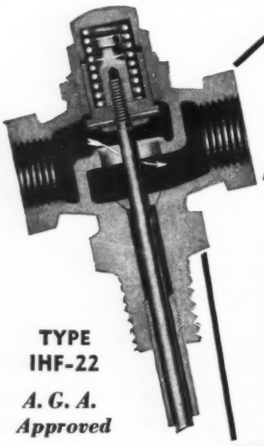

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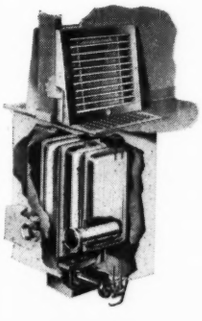

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• BELL JOINT CLAMPS • • • COUPLINGS • • • SERVICE TEES and ELLS •

39 SOUTH LA SALLE STREET • CHICAGO, ILLINOIS

Ector County, Texas. Conditions essential for successful application of chemical plugging methods are described. An A. P. I. paper.

Treating Makes Arkansas Sour Gas Usable by Industry — R. Marne Sanford. *Oil and Gas Journal*, Nov. 13, 1941, pp. 32-33. Several gas fields in South Arkansas produce sour gas containing from 4250 to 9000 grains of hydrogen sulphide per 100 cu. ft. of gas, which is not commerciable usable and has been blown to atmosphere in connection with condensate recovery operations. With the desire to make this gas usable, and prevent wastage, two small commercial desulphurization plants, and one pilot plant, have been constructed and operated, using the Girbitol process. These plants have operated successfully in that they reduce the hydrogen sulphide to a point where the gas will pass the Bureau of Standards lead acetate test (less than approximately 0.3 grains of hydrogen sulphide per 100 cu. ft. of gas) and consequently be suitable for commercial and domestic use. The treatment simultaneously dehydrates the gas sufficiently to prevent the formation of gas hydrates in the transmission lines. It is estimated that the total cost of this treatment will be between 1½ cents and 2 cents per 1000 cu. ft. of gas processed. A new large commercial plant is under consideration, and this development in general opens up great possibilities for utilization of the natural gas produced in this area.

Practical Application of Equilibrium Relations to Oil and Gas Separation Problems — J. E. Laurence. *Oil and Gas Journal*, Nov. 6, 1941, pp. 176-178. The purpose of this discussion is to illustrate the usefulness of the computation procedure in solving problems involving separation of multicomponent mixtures of oil and gas under various conditions of pressure and temperature. Of recent years, multi-stage separation of well effluents has become an important factor in production practice, and a knowledge of results obtainable is essential to the engineer in both natural gasoline plant operation and oil production. In most cases a theoretical analysis will suffice and it is only necessary to obtain enough experimental data to (1) serve as a basis for the theoretical analysis, and (2) make occasional checks on the theoretical results to ascertain that they are reasonably accurate. A C.N.G.A. paper.

Density of Crude Oils Saturated With Natural Gas — M. B. Standing and D. L. Katz. *Petroleum Technology*, Nov., 1941, 7 pp. Density data are reported on 15 saturated hydrocarbon liquids in the range of 35° to 250° F. and 1000 to 8220 lbs. per sq. in. The apparent liquid densities of methane and ethane are shown to vary with the density of the system in which they are present. A method is proposed whereby the densities of liquid hydrocarbon mixtures containing both methane and ethane in solution may be computed at elevated temperature and pressures within the accuracy of usual engineering computations. A method of computing the shrinkage of crude oils based upon the gas-oil ratio, gas analysis, and crude gravity, is outlined.

Petroleum Engineering Study of the Anahuac Field, Chambers County, Texas —Charles B. Carpenter and H. J. Schroeder, Bureau of Mines, Department of the Interior, Washington, D. C. Anahuac field in Chambers county, Texas, is the fourth ranking petroleum reservoir in Texas' Gulf Coast fields and served as a model for the research because of its systematic development on the basis of good engineering practices since production began in 1935. Owned and operated by less than half a dozen companies, the Anahuac wells produced nearly 15,000,000 barrels of crude oil from March, 1935, to October, 1940. Methods and formulas used to calculate the ultimate oil and gas recovery in this field are described in detail in the report. A copy of the report may be obtained by writing for Report of Investigations 3579.

Analysis of Hydrocarbon Gas Mixtures by Mass Spectrometry — Herbert Hoover, Jr., and Harold Washburn. *California Oil World*, 2nd Nov. issue, 1941, pp. 21, 22. The purpose of this paper is to present the progress that has been made in applying the mass spectrometer to the analysis of certain gas mixtures which are of particular interest to the gasoline industry at this time. This may be especially true in view of some of the problems that have arisen in conjunction with the national defense program. A C. N. G. A. paper.

Polyform and Gas Reversion Processes and the Natural Gas Industry — E. R. Smoley and V. O. Bowles. *Oil and Gas Journal*, Nov. 6, 1941, pp. 143, etc. A discussion of the application of these processes to the manufacturer of gasolines of higher octane number. Data on charging stock, yields, costs, and operating data are included. Paper presented before the C. N. G. A.

Computing Gas Flow in Pipe Lines— P. McD. Biddison. *Petroleum Engineer*, Nov., 1941, pp. 60, etc. Part 3 and last. Part 1 in August issue; Part 2 in September issue.

General

Annual Reviews of Petroleum Technology, Vol. 6 (Petroleum Technology in 1940)—Dr. F. H. Garner; 318 pages; paper; tables and charts; published by the Institute of Petroleum, care of University of Birmingham, Edgbaston, Birmingham, 15, England; $2.50 postpaid. Review of progress in the world petroleum industry and in petroleum technology since 1939 with considerable pertinent new data, such as the announced plan of the Nazis to create, after the war, a "petroleum new order" which would eliminate the Western hemisphere as a source of European supply and would utilize as sources Russia, Rumania, Araq, Iran, Albania, Bahrein Island, and Germany's own synthetic production. Generally speaking, the volume comprises an interesting and comprehensive review of the world oil situation as seen in 1940, covering geology, development, production, refining, transportation, storage, refining technology and progressive alternative fuels, asphalts, special products, lubricants and lubrication, statistics, and petroleum literature.

Telling Stockholders About Employee Relations — A review of the annual reports of 235 companies for 1938 and 1939. More than two-thirds of the annual reports of these companies contain information on employee relations. A table is presented which lists 65 industrial relations subjects found in present-day stockholder reports, and compares the frequency with which such topics were discussed in annual reports for the years 1934 and 1935. Case examples are presented showing how companies treat such subjects as personnel policies, labor economics, review of personnel activities, new personnel problems, employee recreation, and labor costs. Survey discusses interim reports, dividend enclosures, and special booklets, citing examples of each of these methods. It is available to executives who address the Bureau on their business stationery. Address: Policyholders Service Bureau, Metropolitan Life Insurance Co., One Madison Ave., New York, N. Y.

The Paradox of Oil and War—From *Fortune* magazine, September, 1941. Material for the article was drawn from many sources, but is based mainly on the work of Walter Levy of New York, authority on world oil, who recently completed an extensive study called "Oil and War," which will be published in book form. Color map in the article shows location of major oil fields of the world and where this oil is shipped. Oil fields, refinery centers, synthetic plants, pipe lines and tanker routes of the world are shown on this map. A chart showing 1940 crude production, prewar (1938) petroleum exports, prewar (1938) imports and refining capacity of the world's major oil producing countries is presented. Estimated 1940 production of synthetics and substitutes is also given in this chart.

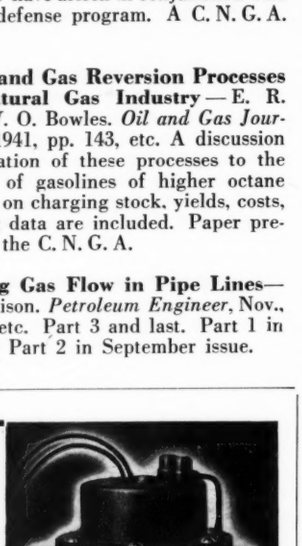
Electric Power—Transportation—Steel —Petroleum—Strategic Materials — Five surveys of basic defense industries prepared by the National Association of Manufacturers, 14 West 49th St., New York, N. Y. The study of electric power was prepared for consideration at the Congress of American Industry, held Dec. 1-5, Waldorf-Astoria hotel, N. Y. Transportation, released last month is now available. Steel was released near the 15th of November and petroleum and strategic materials were released on Dec. 1.

Full text of these surveys is now available upon request.

Gas Heater Controls

in Sure, Simple Terms

Klixon Gas Valves and Klixon Room Thermostats are the simplest yet surest type of controls you can find. The valves, for instance, have no solenoids or other fussy parts—nothing to cause humming, sticking or chattering. They are operated by a simple snap-acting thermostatic disc. And the room thermostats—operated also by thermostatic discs—are small, compact, streamlined as well as vibration proof, non-radio-interfering and free from exposed live parts.



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505 Forest Street **Attleboro, Mass., U. S. A.**

KLIXON

FPC Institutes Gas Survey In Appalachian Region

THE Federal Power Commission announced December 30 its institution, in cooperation with the Office of Production Management, of a comprehensive survey to avert a shortage of natural gas which threatens certain sections of Ohio, Pennsylvania and West Virginia in the winter of 1942-1943. The area to be surveyed covers all states served with natural gas east of the Mississippi River and north of Tennessee and North Carolina.

A total of 85 operating gas utilities among 20 holding company groups have been asked by the Commission to submit information by January 19 from which methods must be developed to assure service to essential war industries as well as general consumer use.

Each of the gas companies has been asked to submit detailed information with respect to its physical properties; maximum peak-day demand for gas on its system last winter; actual or estimated number of customers by classes taking gas from the system on the 1940 - 1941 maximum coincidental demand day; gas reserves and drilling program for the next three years; estimate of the total volume of gas that could have been produced and purchased by the system in excess of the volume delivered during the most recent twelve months; points of possible emergency interconnection with other pipe line or production systems and materials required; the manufactured or by-product gas works in the territory of the company; and the larger industrial users of the company who now have standby facilities or substitute fuel.

■ ■

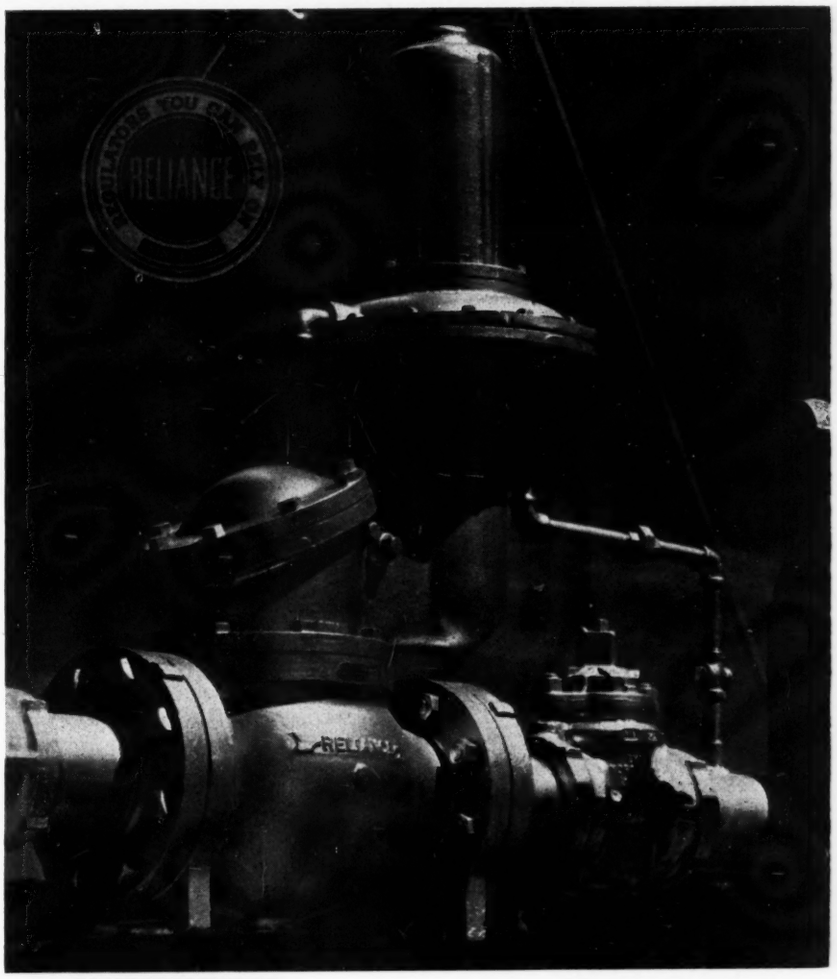
Merco Nordstrom Opens New Pacific Coast Sales Offices

Because of expanded activities, Pittsburgh Equitable Meter Co. and Merco Nordstrom Valve Co., of Pittsburgh, Pa., have opened new sales offices in San Francisco and Seattle. This is in line with a plan of increased sales and service facilities for the entire west coast, according to Captain A. E. Higgins, vice president. Russ Waters has been appointed branch manager of the new San Francisco office, located in the Hobart Building, 582 Market Street. Mr. Waters will be assisted by Fred D. Webster, Richard L. Ford and Gilbert T. Bowman in covering the area of northern California and Nevada. The new Seattle office, located at 119 West Denny Way, will serve the states of Oregon, Washington and Idaho, under the jurisdiction of the San Francisco branch. Frank P. Tangney will be in charge of water meter sales in general in that area and William R. Dominick will cover industrial sales. H. Boezinger, vice president, is in charge of all sales activities for the entire west coast.

■ ■

Price Revision Notice Given By Minneapolis-Honeywell

Minneapolis-Honeywell Regulator Co., Minneapolis, Minn., has issued a notice of price revision stating that the company has been compelled to advance its prices approximately 10% on practically all standard items; more on some special and low volume devices. The increase covers list as well as net prices, reconditioning prices, parts and extra charges. The terms of sale will remain the same, but the cash discount as of November 15, will be 1 per cent. The recurring advances in raw materials, labor, taxes and other operating expenses have made the step unavoidable, the company states.



Reliance CBV Offset Connected Regulator

Reliance Type CBV Direct Connected Regulator

Doing a Fine Job

Leading Gas Companies and their industrial customers prefer and specify Reliance Regulators because they not only insure uniform outlet pressures with variable inlet pressures, but they also do it with the least attention and servicing over long periods. See Reliance for Regulators that give satisfaction and economy in every field of gas control.

RELIANCE REGULATOR CORP.
1000 Meridian Avenue **Alhambra, Calif.**

GAS—1709 W. 8th Street, Los Angeles, California

Yes! SEND ME GAS

for 3 Years at $2.00

SUBSCRIPTION RATES: United States, Mexico, Cuba, South and Central American countries (in advance), three years $2.00; all other countries, $3.00 per year.

Name..... Position.....
Company.....
Address.....
City..... State.....
☐ Check enclosed ☐ Send bill

PRODUCTS

Hose Clamping Tool

American Machine and Metals, Inc., East Moline, Ill.

Model: Universal.

Application: For clamping rubber or fabric hose.

Description: The Universal bends the hose band around the hose, then by turning a small wheel and pushing forward, the band is clinched firmly, leaving a permanent, sturdy connection. The manufacturer states that in these three simple operations, hose couplings can be made in a few minutes. The Universal hose tool is made in small and large sizes and is recommended for liquid, gas or air hose couplings. Full description may be had by writing the manufacturer for Bulletin HB-2.

■ ■

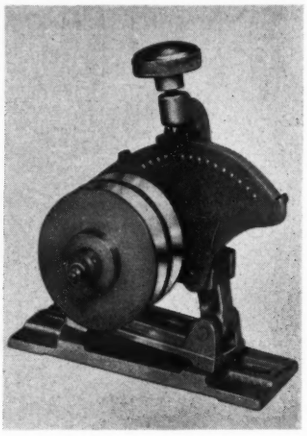
Variable Speed Transmission

Standard Transmission Equipment Co., 416 W. 8th St., Los Angeles, Calif.

Model: JFS-CUB.

Application: Designed for all "A" section V belt applications and for speed ranges up to 3.3-1.

Description: A new addition to the line of V belt speed controls manufactured by the company, the JFS-CUB is being introduced as a low cost speed control to make possible application on machines that never



before could have the advantages of infinite speed selection because of expense. The CUB will transmit full capacity of "A" section V belts, and can be used with all machines now using that size. Among advantages claimed are: the patented positive belt alignment feature which makes possible the mounting of the CUB in any position without impairing function or throwing belts out of alignment; machined and balanced cast iron construction, forced lubrication of the special bronze bearings on which the pulleys rotate; free-end pulley spindle to permit easy installation of belts; both pulleys on one side of pivotal mechanism which permits motor pulley and driven pulley to be almost directly in line with each other. The control comes complete, ready to install. Shipping weight: 12 lbs.

■ ■

Welding Torch

Alexander Milburn Co., 1493 W. Baltimore St., Baltimore, Md.

Model: Type MM Welding Torch.

Description: The manufacturer states that the torch is lightweight, easy to operate and has an accurately controlled flame that is adaptable for intricate work, yet hot enough to permit its use as a heating torch. The Type MM torch is designed to give best results on thicknesses of ⅛ in. and less up to ½ in. It is particularly useful with stainless steel and similar alloys requiring exact heat and flame control. The torch may be used as an adjunct to the lighter, smaller aviation torch, by using the MM torch to heat the area, and the small torch to weld.

Catalogs

• LaPlant-Choate Manufactruing Co., Inc., Cedar Rapids, Iowa, has issued a new booklet on earthmoving equipment which describes the LaPlant-Choate CW-10 "Carrimor" Scraper that is used with the "Caterpillar" Diesel DW-10 Tractor. The 16-page, completely illustrated booklet tells the history and development of the scraper and describes the design features, the bowl, hydraulic system, wheels and brakes. Included also is a section on the TW-10 "Carrimor" Scraper which is the same machine with front wheel assembly for use with track-type "Catterpillar" tractors.

• The Meriam Co., 1955 West 112th St., Cleveland, Ohio, has issued an eight-page condensed catalog, No. C-10, which describes in compact form the company's line of U-type and well-type manometers, draft gauges, flow meters, mercury pressure gauges, tank gauges and all accessories for accurately measuring pressures, vacuums and flows of liquids and gases. The catalog is complete with illustrations and descriptions of the equipment, suggestions for use, size ranges, dimensions, weights, list prices, etc.

• Koppers Co., Tar and Chemical division, Pittsburgh, Pa., has just published an eight-page folder which summarizes all of the company's products, plants and services. The list ranges from Koppers coals and coke to light oil plants and purification systems; from valves, castings, forgings, couplings and piston rings to roofing, tar-base paints, and pressure-treated timber products. Two pages are devoted to the uses, technical description and characteristics of tar acids, tar acid oils, and coal tar solvents.

• Air Reduction Co., Inc., New York, N. Y., has recently issued a new booklet "Air Reduction — A Quarter Century of Progress," giving a brief history of the organization and growth of Air Reduction and the various subsidiary companies that make up the organization. The 54-page booklet is profusely illustrated and has been designed to give a quick over-all picture of the products produced by the company and the use of these products in industry and defense.

SEMET-SOLVAY
ENGINEERING CORPORATION

Blue Gas Plants
Water Gas Machines
Washer Coolers
Naphthalene Scrubbers
Gas Purifiers
Condensers
Waste Heat Boilers
Producer Gas Plants

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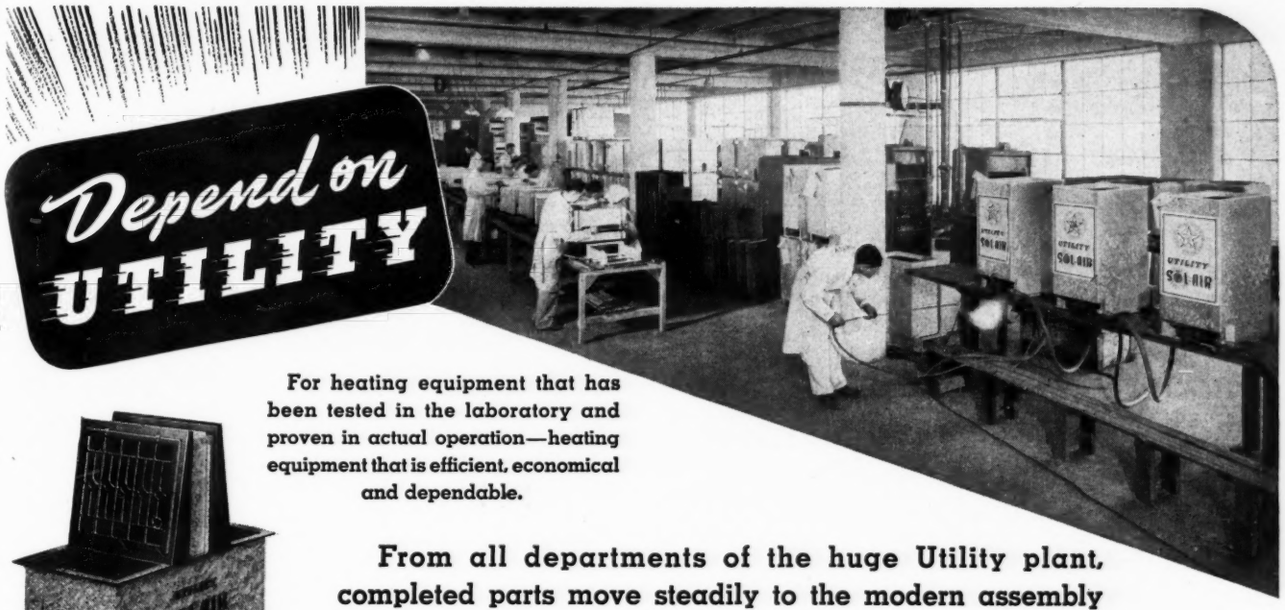
BUFFALO'S *Best Located Hotel*
BUT THAT'S NOT ALL

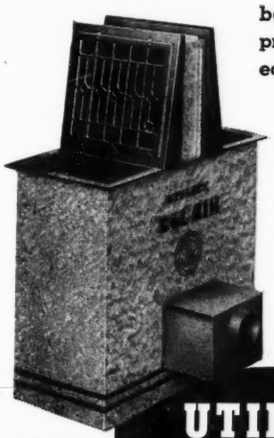
At Hotel Lafayette you're in the heart of Buffalo's shopping, theatre, and business district. Important, sure. But you also enjoy the prestige and comfort of a truly fine hotel — excellent rooms, restful beds, superb food. Moderate rates: Single, $2.75 up; double $4.50 up. Special rates for 4 or more. Write for Folder K-20.

K. A. KELLY MANAGER
Hotel LAFAYETTE
BUFFALO, N.Y.



Depend on UTILITY

For heating equipment that has been tested in the laboratory and proven in actual operation—heating equipment that is efficient, economical and dependable.



MODEL HFD
DUAL REGISTER FURNACE

From all departments of the huge Utility plant, completed parts move steadily to the modern assembly lines, where Utility Heating Equipment is assembled, inspected and tested by capable, experienced workmen.

MANUFACTURERS OF FORCED-AIR BASEMENT AND CLOSET FURNACES, FLOOR AND DUAL REGISTER FURNACES, CIRCULATING HEATERS AND UNIT HEATERS

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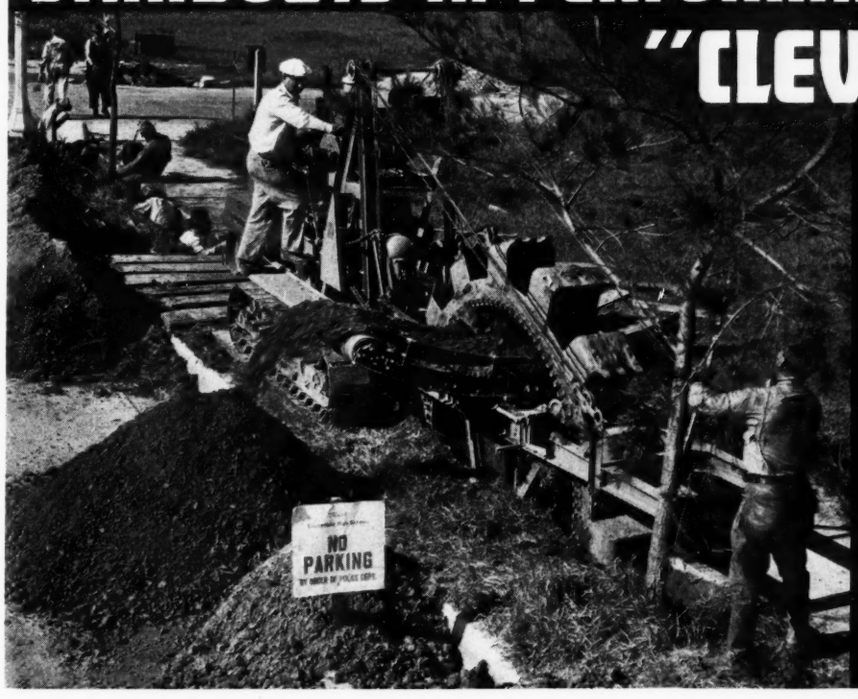
5

STANDOUTS In PERFORMANCE— "CLEVELANDS"!



● Cleveland, for years, has led the field in the production of trenching machines for city and town gas distribution work. The answer is in standout performance.

Clevelands are supreme in their ability to get *in* where the pipe has to be laid and to get the job *done* with maximum speed and lowest cost.

Pictorially portrayed, at left, is a striking example of their compact construction and maneuverability. Machine shown is a "Baby Digger" (Model 95). Despite sidewalks, light-poles and small trees, it is delivering machine-work savings on 98% of this job.

THE CLEVELAND TRENCHER CO.

"Pioneer of the Small Trencher"

20100 ST. CLAIR AVENUE • CLEVELAND, OHIO

Another feature that makes "Clevelands" "standouts" in the field is Truck Speed Transportation on specially built trailers. They load and unload in from 10 to 15 minutes.

STOP NEEDLESS FIRES

...protect workers

Open-top cans of inflammable liquids or ordinary taps are a hazard. Protectoseal *safety* cans and bungs help end careless handling and storing of inflammables. Widely used in vital defense industries. Many models to choose from.

When fires do occur, be ready on an instant's notice to protect lives. Bullard Fire Blankets mount like fire extinguishers...out of way...snuff clothing fires immediately. Ask for complete descriptive folder.

1-B-1

E. D. BULLARD CO.
275 Eighth St., San Francisco

Everything BULLARD in Safety

NATIONWIDE SALES AND STOCKS

LP-Gas Sales Up 38% in 1941

THE biggest annual gain * in the history of the liquefied petroleum gas industry from the standpoint of gas marketed and number of new domestic consumers added by dealers and distributors is indicated unmistakably by the preliminary annual survey of the marketed production of butane and propane for the year 1941.

Sales of LP-Gas for all purposes during the year just closed are now estimated at 432,144,000 gals., representing an overall increase of 118,688,000 gals., or 38% over the sales for the year 1940.

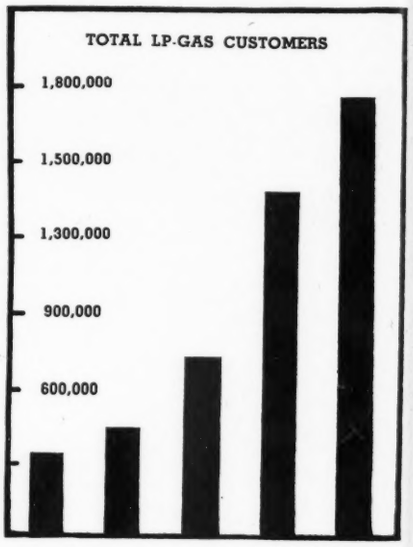
Sales of butane and propane for all industrial uses, including internal combustion engine fuel, gas manufacture and through refinery contracts with various agencies of the Government, have increased from a total of 179,438,000 gals. in 1940 to 259,438,000 gals. in 1941, representing a gain of 44.6% for the year.

The number of new domestic installations will total approximately 380,000. Indications are that marketed production of butane and propane sold for domestic consumption has increased by 38,688,000 gals. during the year, to bring the total for this use up to 172,706,000 gals., or a gain of 21.4% over the 134,018,000 gals. thus used during 1940.

In November, 1940, the Liquefied Petroleum Gas Association estimated the number of domestic consumers of LP-Gas (as of Sept. 1, 1941) at 1,750,000.

Reports from many sources agree that due to the increasing shortages in materials, installations made during the last four months of the year fell off sharply, with the result that the total of all domestic consumers did not increase by more than 30,000 from Sept. 1 to Dec. 31. Thus the total number of domestic consumers as of the close of the year is estimated at 1,780,000.

Due to the newness of the industry, the market for replacements in LP-Gas ranges remains small, and the actual number of such ranges sold is a reasonably accurate check on the number of new domestic users of the fuel. Reports from stove manufacturers to the Association of Gas Appliance and Equipment Manufacturers and representing 53% of the industry output for the first nine months of 1941 have been expanded to 100% of the industry for the entire year, with the result that a total of 372,000 LP-Gas ranges now appears a reasonable prediction of the final tabulation.



The amazing growth and importance of the liquefied petroleum gas industry is shown by the gain of customers during the last five years, as revealed in the accompanying chart.

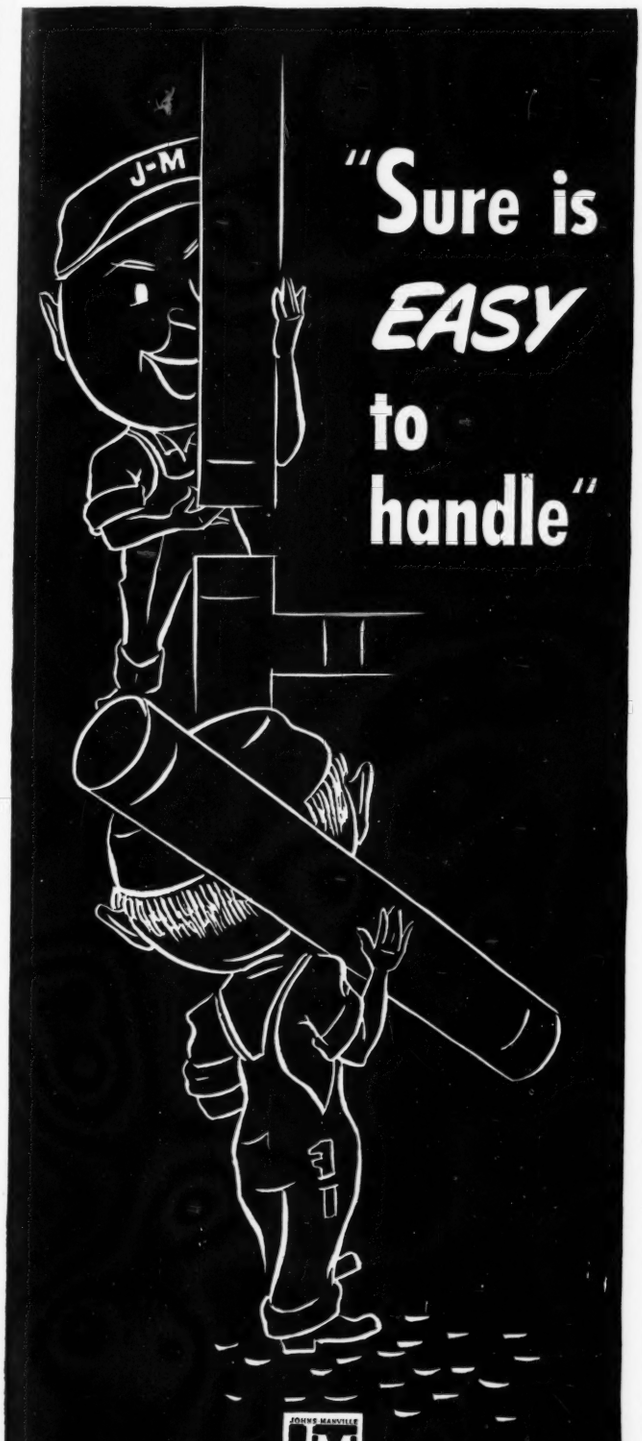
This represents an increase of more than 60% over last year's sales in units and 74% in dollar volume. For the nine months period ending with September, ranges shipped for use with LP-Gas were 15.5% of all gas range shipments.

The sale of steel cylinders, ranging in size from 20-lb. to 420-lb. capacity has increased about 25% over 1940, bringing the total to approximately 430,000 units.

Approximately 300 new tank cars, suitable for either butane or propane were constructed during the year, with an estimated 90 to 125 more on order, but with no steel available for their fabrication. The total number of such cars now in use is about 1,400. On an average turnaround of 2½ times per month, this capacity would be sufficient to transport 420,000,000 gals. per year. Increasingly large volumes of both butane and propane are being transported by tank trucks, although the amount of such transportation available and in use is not known. It is estimated that the sum total of transportation facilities available at the end of 1941 would be capable of moving at least 700,000,000 gals. of gas per year.

New bulk stations put into operation during the 12 months, as reported by BUTANE-PROPANE *News*, totaled only 38, as compared with 78 reported for the year 1940.

*Excerpts from an article appearing in *Butane-Propane News*, January, 1942, page 13.



"Sure is *EASY* to handle"

JOHNS MANVILLE JM PRODUCTS

Johns-Manville
TRANSITE FLUE PIPE
AN ASBESTOS PRODUCT
For venting gas-burning appliances

LEADERSHIP!

In every line of endeavor there is always a Leader—always some one who stands head and shoulders above the crowd—always one company that ranks above all others in achievements, and quality of product. This is true in the Gas Control field. REYNOLDS, with half a century of experience, is not only the pioneer, but the largest exclusive maker of Gas Control Equipment.

The introduction of new regulators to meet changing requirements is proof of Reynolds Leadership and is part of Reynolds program of constantly improving its products. For, Reynolds is not content to rest upon any past achievements. Reynolds is proud of its position and is determined to continue its Leadership—to the end that Reynolds will always be the one best source of supply for Gas Control Equipment.

REYNOLDS PRODUCTS

High Pressure Service House Regulators:
Straight Lever Type—Models 10-20 Series. Toggle Lever Type—Model 30 Series.

Low Pressure Service or Appliance Regulators.

District Station Regulators:
Single or Double Valve. Auxiliary Bowl and Automatic Loading Device Optional.

High Pressure Line Regulators:
Pilot Loaded—Pilot Controlled.

Toggle Type Regulators:
Single Valve, Double Valve, Triple Outlet.

Seals: Dead Weight or Mercury.

Relief Valves: High or Low Pressure.

Back Pressure Valves:
Automatic Quick-Closing, Anti-Vacuum Valves.

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Gas Control Since 1892

REYNOLDS GAS REGULATOR CO.
ANDERSON, INDIANA, U. S. A.

Harlem, Mont., Gas Line Is Now Completed

Montana-Dakota Utilities Co., Minneapolis, Minn., has completed a 13-mile natural gas pipe line from the Bowes gas field to Harlem, Mont., and has finished installation of the distribution system. The company is now installing a new system at the Fort Belknap Indian Agency a short distance southeast. This is the first supply of natural gas for Harlem.

■ ■

Free Ads to Employees

"Public Service," company magazine of the Philadelphia Co. and its subsidiary companies of Pittsburgh, Pa., devotes almost a column to classified ads, known as "adlets." The ads are inserted in the column free of charge to employees of the company.

GEORGE A. BURRELL

Gas Engineer

Design—Construction—Reports
Court Work

■

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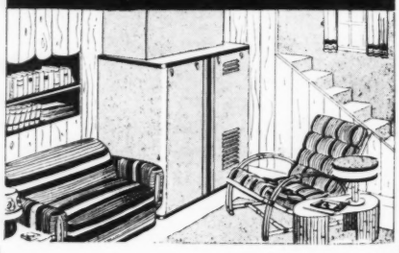
THE *Pacific* LINE HAS *Everything* YOU WANT



★ Proper housing of defense workers demands both new installations and replacements.

Efficient, automatic fuel saving economy and uniform, healthful warmth distribution contribute to today's defense objectives of conservation and National health.

In addition, the PACIFIC line offers gas appliance dealers the time and money-saving features of completely assembled shipments, quick easy access to all operating parts for servicing and unusual ease of installation.

Write today for free catalog and details.

Pacific Gas Radiator Co.
HUNTINGTON PARK, CALIFORNIA

World's Largest Gas Cycling Plant

CONSTRUCTION of the world's largest gas cycling plant will be undertaken in Texas as a major step in the program to boost production of 100-octane aviation gasoline, it has been announced by the Office of Petroleum Coordinator for National Defense.

The plant, to be erected in the Katy gas field of Waller county, Texas, will process 274,000,000 cu. ft. of gas daily —an amount which will yield nearly 7500 barrels per day of combined distillate, kerosene, naphtha, natural gasoline, butane and iso-butane.

Stanolind Oil & Gas Co., Humble Oil & Refining Co., and Humble Pipe Line Co. will invest more than $3,000,000 in the project. The plant will be operated by Humble Oil & Refining. At the recommendation of the Office of Petroleum Coordinator, a preference rating of A-1-a was assigned to the project to insure swift construction.

The plant will extract the maximum economical amounts of iso-butanes and butanes, essential to the manufacture of 100-octane aviation gasoline. As first contemplated, it was designed to recover only 50% of available butanes, but, at the suggestion of the Coordinator's Office, the companies interested redesigned the project to recover 80% of butanes. Besides the plant proper, the A-1-a rating covers material and equipment for the drilling of eight additional gas wells and for the construction of a four-in. 46-mile long gasoline pipe line.

The Katy field is completely unitized. Moreover, it will be operated most conservatively—on a basis of less than 3% yearly withdrawal of available condensates and butanes. After processing, the gas will be returned to the formations for pressure maintenance. Of the 102,000,000 barrels of condensate and butane reserves estimated in place, it is expected that the plant ultimately will recover 75%.

Butanes and iso-butanes to be extracted by the big plant will be valuable additions to the stocks of components for manufacture of 100-octane aviation gasoline. Increased extraction of such components is one of the major items in the comprehensive program launched by Petroleum Coordinator Harold L. Ickes for increasing the production of 100-octane gasoline. The super-fuel, which is an American development, yields 25% more power for military planes.

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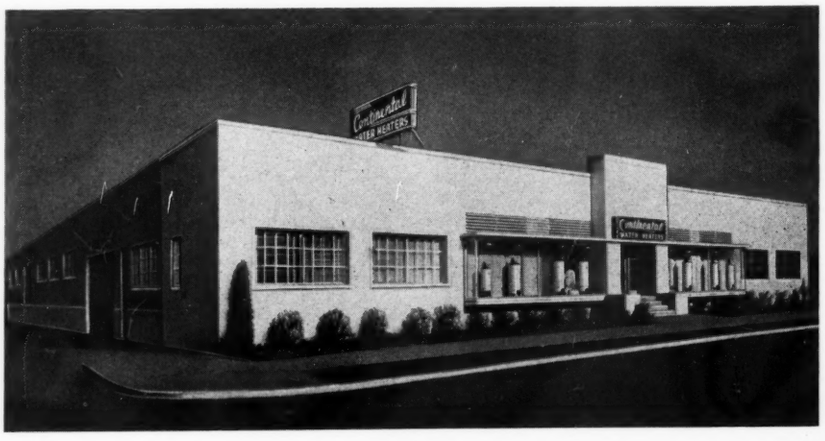
Hope Natural Gas Co. To Complete West Virginia Line

The Hope Natural Gas Co., Clarksburg, W. Va., will soon complete construction of 46 miles of 12-in. pipe line from Ripley to Waverly, W. Va. The laying of the line is now in progress with welding done by H. C. Price Co. and general contracting handled by Ligin & Ligin.



New Los Angeles Plant For Continental Water Heater Co.

Celebrating the opening of their new showroom and factory at 1801 Pasadena Ave., Los Angeles, Calif., officials and employees of the Continental Water Heater Co. were hosts to their friends on Dec. 13. (See cut above.)

Many of those attending the open house remembered the first birthday party held by the company in 1931. Since that time the company has expanded rapidly and now distributes water heaters in all of the western states and many of the eastern and southern states. Representatives and warehouses are located in Seattle, Wash.; San Francisco, Calif.; Kansas City, Mo.; Fort Worth, Texas, and New Orleans, La.

The present officers of the company are Wayne R. Smith, president; K. Eisinga, vice president, and D. Shepherd, secretary.

The new building, of modern design, covers an acre and a half site with 25,000 sq. ft. of floor space. Modern lighting is a feature and a large showroom is available.